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Analysis**

SKILLTEMPO ASSESSMENT (STA)

AUGUST 2000

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The reporting of skill tempo (SKILLTEMPO) in the Army is currently limited to the average number of days deployed by military occupational specialty (MOS). While useful in some respects, this aggregation across deployment categories potentially obscures key characteristics of the deployments, which the senior Army leadership may find useful. This analysis attempts to determine if there are more informative measures to report SKILLTEMPO that will better inform the senior Army leadership about the character and effects of ongoing deployments on the Army.

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SKILLTEMPO ASSESSMENT (STA)

SUMMARY

THE PROJECT PURPOSE is to determine if there are better ways to report deployment data and skill tempo (SKILLTEMPO) that provide a more comprehensive look at personnel deployments.

THE PROJECT SPONSOR was the Commander, US Army Personnel Command, Training and Analysis Division, 200 Stovall Street, Alexandria, VA 22332.

THE PROJECT OBJECTIVES were to:

   (1) Determine if it is possible to portray deployment data in a manner that better depicts the character of the deployments.

   (2) Examine deployments for specific military occupational specialties (MOS) of interest.

   (3) Automate a system to graph deployments by MOS.

   (4) Determine if the data provide a basis on which to model future deployments.

THE SCOPE OF THIS PROJECT

This report covers a statistical analysis of the individual deployment data extracted from the Total Army Personnel Data Base (TAPDB). It also includes a description of a software macro used to generate the reports described within the report.

The data used in STA is a snapshot as of early March 1999 and included deployments from September 1992 to March 1999. The data covers officers and enlisted personnel in both the Active and Reserve Component. However, the TAPDB is incomplete as an historical database, limiting the usefulness of the analytical results.

There are several limitations worth mentioning that affect the results of the analysis done here. The most significant is that the TAPDB deployment information is based on Standard Installation/Division Personnel System (SIDPERS) transactions submitted by personnel specialists at the unit level. If the unit personnel section fails to report an individual's deployment, it does not show up in the TAPDB, and there is no simple way to determine that the record is missing. If there were errors or omissions associated with the deployment, it was often possible to correct or complete the records. The bottom line is that our analysis is based on what was reported.

Another limitation is that for those deployments reported, a portion were missing a redeployment date. Most of these cases were obvious because they violated the maximum deployment time period of 1 year. Chapter 2 of this report discusses how we handled missing dates.

THE MAIN ASSUMPTION is that the data in the Total Army Personnel Data Base (TAPDB) is sufficiently accurate and complete to provide a basis for reporting deployments.

THE PRINCIPAL FINDINGS. It is possible to convey trend data on deployments using the graphs developed in STA. These charts can supplement the current SKILLTEMPO report format to better inform the senior Army leadership. Although the resulting charts contained in this report do not accurately reflect the total number of deployments, they present the lower bound of deployments. The complete data set would not reduce the number of deployments, but possibly increase them.

THE PRINCIPAL RECOMMENDATIONS

(1) Present deployment data across time to better convey the level of SKILLTEMPO for high demand, low-density MOS. Use of charts similar to those included in this report can show trends in deployments that are not readily apparent with the current report.

(2) Correct deficiencies in the TAPDB to more accurately portray deployments. When corrected, it will be possible to do additional analyses on the data.

THE PROJECT EFFORT was conducted by LTC Robert L. Steinrauf and Dr. Yuan-Yan Chen, Force Strategy Division, Center for Army Analysis.

COMMENTS AND QUESTIONS may be sent to the Director, Center for Army Analysis, ATTN: CSCA-FS, 6001 Goethals Road, Suite 102, Fort Belvoir, VA 22060-5230.

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CHAPTER 1 EXECUTIVE SUMMARY

1.1 Project Description

The reporting of SKILLTEMPO in the Army is currently limited to statistics on the number and average duration of deployments by military occupational specialty (MOS). While useful in some respects, this aggregation of deployment information potentially obscures trends and key characteristics of the deployments. These trends and characteristics might be useful to the senior Army leadership. This analysis examines new ways to portray various aspects of SKILLTEMPO that will provide the senior leadership with information about the character and effects of ongoing deployments on the Army.

This project uses two charts to convey additional information on specific MOS to decision makers. The first is the deployment profile chart, which shows, by MOS, the number of deployments and the percentage of the MOS deployed over time. It shows trends that help determine if the level of deployments is generally constant over time or, perhaps, if soldiers in the particular MOS deploy for specific events.

The individual deployment chart shows the deployment data by length of the individual deployments, something not possible to determine from the deployment profile chart. Each deployment is indicated by a single line. This gives an indication of both the rate at which deployments occur and the general duration of the deployments.

Currently, the Office of the Deputy Chief of Staff for Personnel (ODCSPER) generates a monthly SKILLTEMPO report that shows the percentage of the MOS deployed and the average number of deployment days for the entire MOS population. This report provides a static look at deployments but does not capture important information that is readily available in the deployment data base.

1.2 Project Results

Based on incomplete data bases, the results of this project do not accurately reflect deployments. The actual deployment numbers are likely to be higher, since more data would reflect missed deployments. However, the generated charts provide a sample of the types of output available to analysts and decision makers. It is possible to present more information on SKILLTEMPO than is currently included in the DCSPER monthly SKILLTEMPO report.

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CHAPTER 2   BACKGROUND AND METHODOLOGY

2.1   Problem Statement and Background

The SKILLTEMPO analysis effort was motivated by a desire to develop a better way to summarize personnel deployments for senior Army leadership. Currently, ODCSPER generates a monthly report on individual deployments by military occupational specialty, a portion of which is shown in Figure 1. While it portrays several aspects of personnel deployments by MOS, it only provides a snapshot of the current situation. What we attempted to develop were ways to show trends over time and the character of the individual deployments. By generating charts that showed this data, we believed we could quickly convey the extent of operational deployments on the Army and the various trends, which might suggest potential personnel issues.

SKILLTEMPO for Month of November 98
TOP FIVE MOSs BY CA, CS AND CSS

CA MOS	NAME	MOS POP	DEPLOYABLE POP	# PERS DEPLOYED	TOTAL MANDAYS DEPLOYED	%MOS DEPLOYED	% DEPLOYABLE POP DEPLOYED	AVG DAYS MOS DEPLOYED	AVG DAYS DEPLOYABLE POP DEPLOYED	AVG DAYS DEP OF THOSE DEPLOYED
13R	FIELD ARTILLERY FIREFINDER	492	390	91	2700	18%	23%	5	7	30
93F	FIELD ARTILLERY METEOROLOGICAL	221	178	24	720	11%	13%	3	4	30
19K	M1 ARMOR CREWMAN	12681	10386	1279	35637	9%	12%	3	3	28
19D	CAVALRY SCOUT	6778	5505	656	19000	9%	12%	3	3	29
12B	COMBAT ENGINEER	8915	7449	822	24639	9%	11%	3	3	30

CS MOS	NAME	MOS POP	DEPLOYABLE POP	# PERS DEPLOYED	TOTAL MANDAYS DEPLOYED	%MOS DEPLOYED	% DEPLOYABLE POP DEPLOYED	AVG DAYS MOS DEPLOYED	AVG DAYS DEPLOYABLE POP DEPLOYED	AVG DAYS DEP OF THOSE DEPLOYED
67V	OBSERVATION/SCOUT HELICOPTER	105	95	19	570	18%	20%	5	6	30
37F	PSYCHOLOGICAL OPERATIONS	464	386	65	1950	14%	17%	4	5	30
96Z	INTELLIGENCE SENIOR SERGEANT	30	27	4	120	13%	15%	4	4	30
98Z	SIGNALS INTELLIGENCE (SIGNET)	25	14	3	90	12%	21%	4	6	30
67R	AH64 ATTACK HELICOPTER REPAIRER	1684	1174	199	5464	11.00%				

CSS MOS	NAME	MOS POP	DEPLOYABLE POP	# PERS DEPLOYED	TOTAL MANDAYS DEPLOYED	%MOS DEPLOYED	% DEPLOYABLE POP DEPLOYED	AVG DAYS MOS DEPLOYED	AVG DAYS DEPLOYABLE POP DEPLOYED	AVG DAYS DEP OF THOSE DEPLOYED
63D	SELF-PROPELLED FIELD ARTILLERY	635	535	61	1830	10%	11%	3	3	30
46R	BROADCAST JOURNALIST	247	202	22	651	9%	11%	3	3	30
46Q	JOURNALIST	373	309	34	963	9%	11%	3	3	28
35C	SURVEILLANCE RADAR REPAIRER	35	27	3	90	9%	11%	3	3	30
35M	RADAR REPAIRER	186	124	15	450	8%	12%	2	4	30

Figure 1. Extract of ODCSPER SKILLTEMPO Report

There is a common belief in the Army that the tempo of operations has increased significantly since the end of the Cold War in 1989. A significant concern is what the increase in personnel tempo (PERSTEMPO) means for the Army. PERSTEMPO is defined as the rate of deployment of units or soldiers measured as a percentage of some population. To help shape the questions to ask about the effects of PERSTEMPO, it is necessary to describe PERSTEMPO in a meaningful way. This report offers several ways to describe the data that incorporates more information than included in the current DCSPER report.

The Army characterizes PERSTEMPO in terms of deployment tempo (DEPTEMPO) and skill tempo (SKILLTEMPO). DEPTEMPO is defined as the percentage of time spent on "out of station operational deployments" by unit. It is useful in determining if there is sufficient Army force structure to support projected operations and ongoing peacetime requirements. However, it

does not capture the number and duration of deployments for the individuals in the deployed units or on individual deployments. Units frequently deploy with some unit members remaining behind, or with augmentation by individuals from other units. DEPTEMPO is useful when making force structure decisions, but is inadequate when making personnel policy decisions.

SKILLTEMPO measures individual deployments grouped by MOS. It is the percentage of time spent on "out of station operational deployments" by MOS and skill level. These operational deployments are tracked by personnel transactions generated by the individual's unit of assignment and are collected by the US Army Personnel Command. In contrast to DEPTEMPO, SKILLTEMPO captures all individual deployments, at least in theory, and allows specific groupings of soldiers to be examined. It can be useful in making decisions about personnel policy such as postdeployment stabilization, recruiting and retention goals, etc. The SKILLTEMPO analysis uses this data as the basis for the work done.

2.2 Purpose and Objectives

The purpose of the analysis was to determine if there are better ways to report deployment data and SKILLTEMPO that provide a more comprehensive look at personnel deployments. Specifically, STA characterized deployments by type; identified ways of presenting the data to show trends; looked for interrelationships between deployments of specific MOS; and determined if the data provided a basis on which to model future deployments. Additionally, as we worked with the data, we identified additional work that could be done to provide more insights into the effects of personnel deployments on the Army.

Before the data issues were known, it was also a goal to provide the sponsor with the program to allow them to generate deployment charts for various military occupational specialties for inclusion in reports. Although the program was completed (see Appendix D) it was not used because of the incomplete data base. A series of charts is included for specific MOSs identified by the sponsor.

2.3 Scope and Limitations

Although there is potentially an immense amount of work that could be done with the individual deployment data, we chose to limit the scope of this analysis. Our goal was to determine if there was value in developing the data base and generating new reports. This report covers statistical analysis of the individual deployment data extracted from the Total Army Personnel Data Base. PERSCOM maintains the TAPDB, which contains all personnel transactions reported for each individual in the Army. Only deployment-related information was included in the extract.

There are several limitations of using the TAPDB. Perhaps the severest is that up until the fall of 1999, updates to the TAPDB deleted the records of all enlisted soldiers who had left the Army. In effect, the data base only contains data on those soldiers currently serving on active duty. Because of this, the charts shown in this report do not accurately reflect the deployment of individuals in the Army. In addition, the individual records are overwritten as new information is reported and the old data base is not archived, so it is not possible to reconstruct the

deployment information on soldiers no longer serving in the Army. The data used in STA is a snapshot as of early March 1999 and included deployments from 1991 to March 1999.

Instead of looking at all possible officer, warrant officer, and enlisted specialties, we looked at those specialties identified by the sponsor as being of interest. However, this work makes it possible to quickly analyze any specialty if the need should arise in the future. For the identified specialties, we generated various descriptive statistics for the deployments, including the average deployment time and the distribution of the deployments by category.

We only used deployment data from fiscal year 1993 onward, since the data prior to that point appeared incomplete and represented the posthostilities deployments following Operations DESERT SHIELD and DESERT STORM. The focus of the project was on deployments to non-major theater wars operations. And as other studies have shown (e.g., SADE, CAA-MR-98-6), the type and number of deployments have changed since the end of the Cold War, as marked by the Gulf War.

Of the other limitations that directly affect the results of the analysis, the most significant is that the TAPDB deployment information is based on SIDPERS transactions submitted by personnel specialists at the unit level. If the unit personnel section fails to report an individual's deployment, it does not show up in the TAPDB, and there is no simple way to determine that the record is missing. If there were errors or omissions associated with a deployment record, it was often possible to correct or complete the record. The bottom line is that our analysis is based on what was reported.

Another limitation is that for those deployments reported, a portion were missing a redeployment date. Most of these cases were obvious because they violated the maximum deployment time period of one year. Paragraph 2.4, Chapter 2, discusses how we handled missing dates.

2.4 Methodology

The first step in our analysis was to condition the data. Figure 2 shows a sample of the raw data and some of the problems encountered. The database includes social security numbers, deployment date, type of deployment, deployment location, projected and actual redeployment dates, unit identification code (UIC), pay grade, sex, and MOS. There were approximately 250,000 individual records in the database and approximately 160,000 records with deployments starting after 1 October 1993. The error rate on this portion of the data was below 5 percent.

```
00001  E00014****19980206TWW            19980805WDJ9A002F77F  O00    R
00002  E00144****19901010OSA            19910407WAJJB006M11B  H00YY  R
00003  E00144****19940919OHA19950318 19950116 WGKEAA08M71M  H00 YY  R
00004  E00144****19980402 OGM19981010              WYJ2A106 M92Y  O        G
```

Record
Number   SSN   Deployment   Projected   UIC   MOS   Compo
                         Date   Redeployment   Sex   SQI
    Officer,   Date
    Warrant, or   Country   Pay   Language
    Enlisted   Code   Actual   Grade   Identifier
                         Operation   Redeployment
                         Type   Date

Figure 2. Sample Records from the TAPDB

Obvious errors such as negative length deployments and nonexistent dates (e.g., June 31) were either corrected or censored depending on available information. We then imputed values for missing data based on other information available in the data base. Examples include filling in missing redeployment dates for individuals assigned to units in which all other members of that unit returned en mass on a specific day and imputing a redeployment date based on the apparent end of an operation based on individuals from other units redeploying en mass. If it was not possible to determine a probable redeployment date from other data, the projected redeployment date was used, if available. While not exact, it would provide a good estimate of the planned duration of the deployment. These steps proved satisfactory for a majority of the missing redeployment dates, leaving less than 1 percent with missing redeployment dates.

For the remaining deployment records, we assumed that the individual had deployed for the maximum period of time associated with the type of operation. If it was an operational rotation, we assumed a 6-month deployment; a training deployment to a combat training center (CTC) was 30 days, etc. This provided deployments dates for the remaining records.

2.5 Characterization of the Data

Once the omissions and errors in the data were corrected, it was possible to characterize the data. Although there were eight categories for deployments, almost all of the deployments were for either operations or training. The types of possible deployment categories are:

- **US Civil Deployments** - all civilian assistance and humanitarian deployments within the continental United States (CONUS) such as controlling riots, fighting forest fires, and providing natural disaster relief.

- **Humanitarian International** - outside continental United States (OCONUS) humanitarian assistance.

- **Counterdrug** - CONUS/OCONUS deployments in support of counterdrug operations.

- **Major Training** - major command-level exercises (i.e., Bright Star, Team Spirit) requiring deployment from home station.

- **Operational Deployments** - any major regional conflict and operation other than war, to include peacekeeping/observation missions and migrant operations. Examples include Operation SOUTHERN WATCH, Joint Task Force Bravo, Joint Task Force PROVIDE COMFORT, Operation JOINT ENDEAVOR, Operation JOINT GUARD, and peacekeeping in Macedonia.

- **Combat Training Center Deployments** - deployments to one of the Combat Training Centers (CTC) for a training rotation.

- **UN Staff/Special Forces Team Deployments** - deployments on United Nations or North Atlantic Treaty Organization staffs and all US Army Special Operations Command team deployments.

The CTC deployment category was added in 1998, but the deployment data indicates that it is not widely reported since there were fewer than expected deployments of this type reported.

2.6 Data Handling

The data base from the sponsor was an ASCII text file so it was necessary to develop software routines to process the data. Using Microsoft Access, it was possible to condition the data and store the database for subsequent operations. SPSS (Statistical Package for Social Scientists) was used to conduct the statistical analysis. Microsoft Excel and Visual Basic Application for Excel were used to create the output charts depicting the deployment information.

A Visual Basic Application (VBA) for Excel program was written to allow a user to generate output charts for a specific MOS. The program prompts the user to identify the MOS to process and then queries the Access database for the relevant deployment data. After returning the data, the program generates the deployment profile and individual deployment charts. The code is included in Appendix D. The program requires the SKILLTEMPO database, Microsoft Access, and Microsoft Excel.

2.7 Data Structures

There are two key data files necessary to generate the graphs depicted in this report. The TAPDB, described above, contains the principle elements concerning individual deployments. It is in a Microsoft Access database, which makes it easier to manipulate. To return useful information from the query, there need to be three field names in the file—MOS, Deployment Date, and Redeployment Date. The VBA program queries the Access database and returns the values in these three fields for those records that match the input MOS. If different field names are used, the VBA program must be modified to reflect the new names.

The other database used is a by month, by grade strength, rollup of each MOS in the Army. The database contains the month and year, the MOS, the grade, and the total personnel. Each year is on a separate Excel spreadsheet in a file named MOSstren.xls. The VBA program uses this data to determine the total population for the specific MOS of interest and needs to be updated for any analysis past fiscal year 1998.

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Extracts of both databases are contained in Appendix B.

CHAPTER 3 RESULTS

3.1 Descriptive Statistics of Individual Deployments

The first step in analyzing the deployment data is to look at the descriptive statistics. For purposes of this analysis, we looked at the distribution of the deployment duration by type. By describing the deployments in this way, it is possible to tell what type of deployments soldiers in the specified MOS experience--relatively short or long, rotational type deployments. Seeing the actual distribution provides more information than just the mean and standard deviation, which are also included in the output.

The following histogram shows the deployment duration for the 13R, Firefinder Radar Operator. Note that the number of soldiers still deployed is shown at the far left of the chart. This type of information can show trends in deployments. For example, a majority of the deployments in the 180-day bin might indicate that the soldiers in the MOS tend to deploy to ongoing rotational operations, such as in Bosnia. A majority in the 30- or 60-day bins might indicate shorter, unexpected contingency operations. Based on the distributions, it might be possible to better manage the soldiers in the career management field through increased information to the soldiers in the field or incentives.
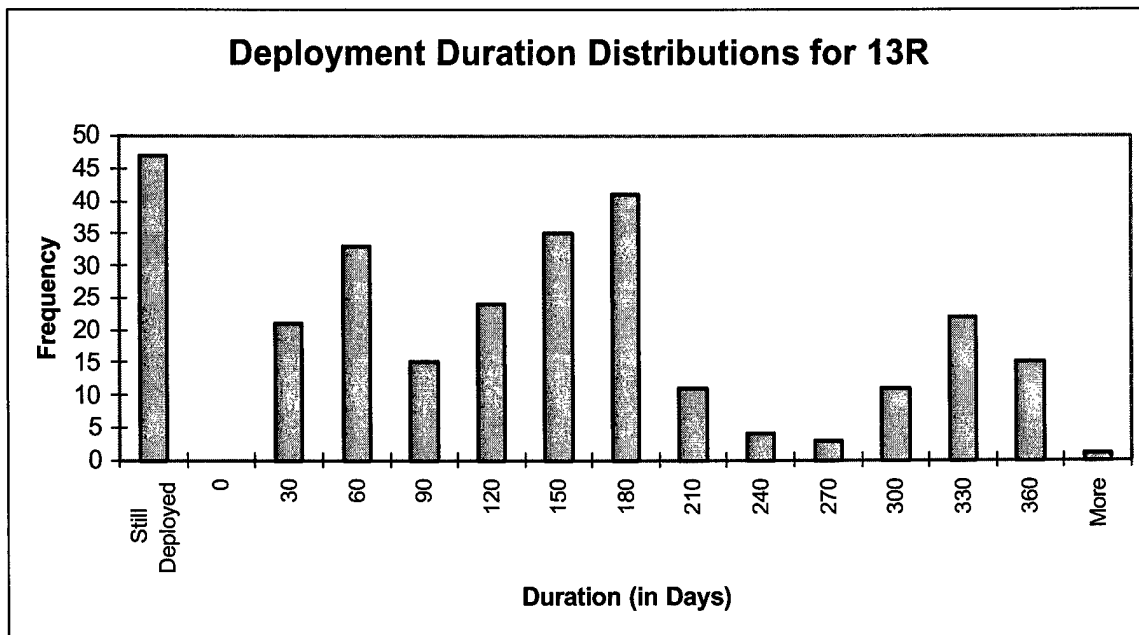
Figure 3. Descriptive Statistics of Individual Deployments

3.2 Deployment Profile

The deployment profile chart shows both the number of soldiers in the MOS deployed over time and the percentage of the MOS population deployed. The macro effects of deployment on the soldiers in the MOS in terms of a monthly snapshot of the situation are apparent. The percentage of the MOS deployed is based on monthly strength totals for the MOS, which were provided by PERSCOM, and aggregates across all skill levels. It would be possible to break the deployments down further to skill level, but the program does not currently incorporate that capability.

What the deployment profile chart does not show is the individual deployments over time. It is not possible to tell from the chart when an individual's deployment begins or ends. That information is contained in the individual deployment chart discussed next.
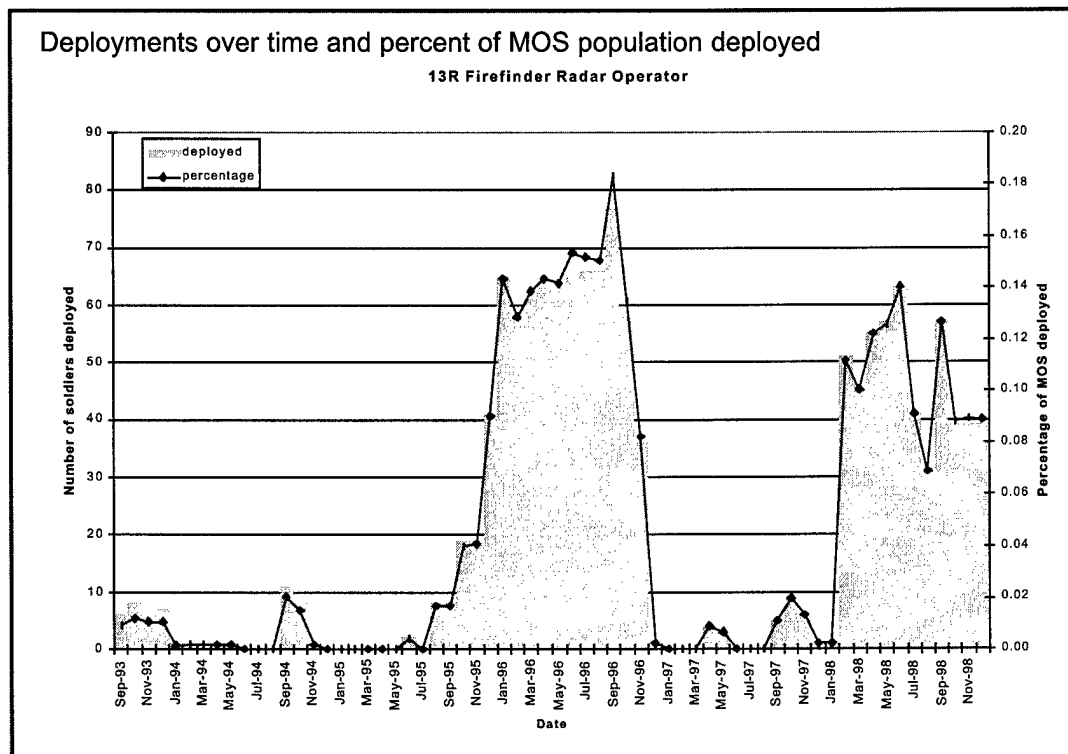
Figure 4. Deployment Profile

3.3 Individual Deployments

The individual deployment chart shows the start and duration of each deployment as shown in the figure below. Figure 5 gives a sense of how often and how long deployments occur. If the gradient is steep, a large number of deployments took place in a very short period of time (e.g., February 1998 on the chart). The length of the line, depicting the duration, quickly characterizes the deployments for the MOS. This chart gives a better picture of the lengths of deployments than do the descriptive statistics that cite the average and standard deviation. The strength of this chart is that it shows trends in deployment. For the 13R MOS, it appears that large numbers of these individuals deploy to an operation, remain deployed for 4 to 12 months, and then redeploy en mass. It can also show the effects of changes in deployment policy. (In cases with a large number of deployments, the program generates several charts due to graphing limitations.)
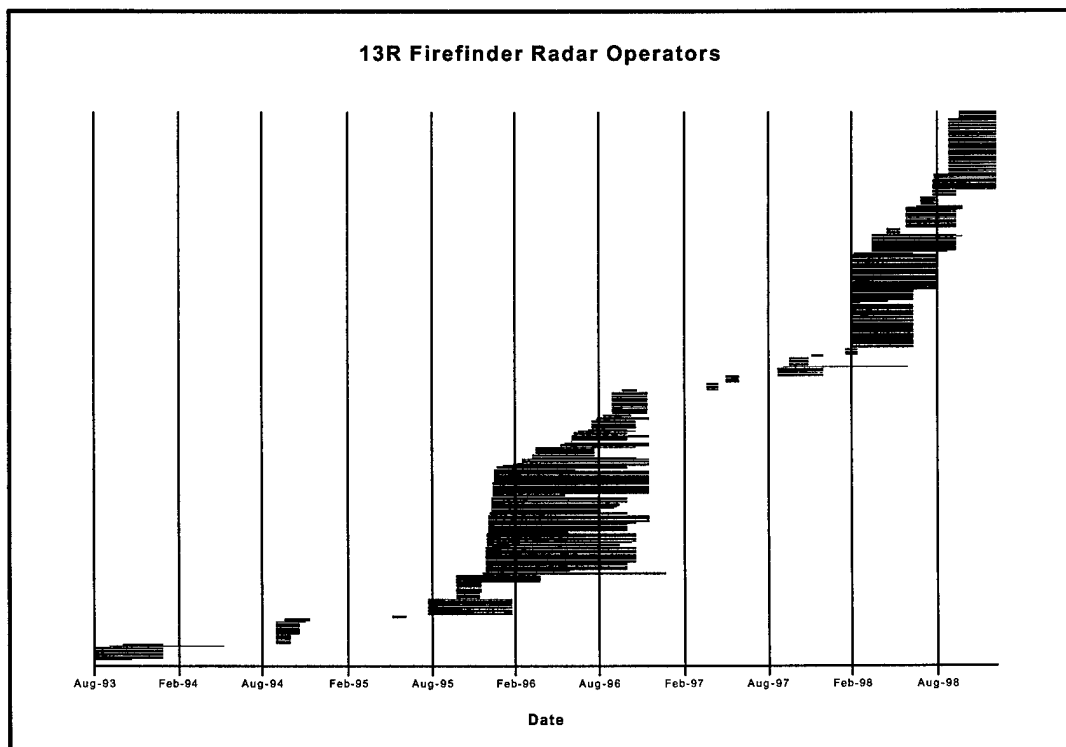
Figure 5. Individual Deployments

3.4 Depiction of Deployment Data

Figures 4 and 5 can quickly convey to senior leaders or analysts more information than is currently contained in the ODCSPER SKILLTEMPO report. They provide information on deployment trends that cannot be easily captured by summary statistics. As more accurate information becomes available, it might be desirable to generate these charts for the top five MOSs for combat, combat support, and combat service support to include in the monthly SKILLTEMPO report.

As part of this project, charts were generated for a number of MOSs that PERSCOM identified as having a high skill tempo. Figure 6 shows the sponsor's list of MOSs of interest for which charts are included in Appendix C.

• **11B Infantryman**	• **39B Missile Repairman**
• **11M Fighting Vehicle Infantryman**	• **46Q Journalist**
• **12C Bridge Crewman**	• **67 CMF Aviation Mechanic**
• **13R FA Firefinder Radar Operator**	• **77W Water Treatment Specialist**
• **14T Air Defense Crewman**	• **88M Motor Transport Operator**
• **15 OMF Aviator**	• **95B Military Police**
• **16T Patriot Missile Crewman**	• **96 CMF Intelligence**
• **18 CMF Special Forces**	• **97B Counterintelligence Agent**
• **37F PSYOP Specialist**	• **97E Interrogator**
• **38A Civil Affairs Specialist**	• **98 CMF Signals Intelligence**

Figure 6. MOS of Interest

CHAPTER 4   FUTURE RESEARCH

4.1   Additional Enhancements

With additional work, these charts and others could be integrated into the monthly DCSPER SKILLTEMPO report. They would provide a visualization of the deployments for the senior Army decision makers. To do this would require monthly updating of the data fields and modification of the code to handle only the latest changes in deployment.

It would also be possible to report deployments by pay grade within an MOS or by type of deployment. Additional programming would be necessary to include these capabilities.

4.2   Potential Contributions

The results of this project and the program might also be of use in several related areas. It would be possible to quickly show the effect of various personnel policies (e.g., postdeployment stabilization) on the percentage of the MOS unavailable for future deployments. This type of analysis could provide insight on personnel turbulence.

Other work could be done on determining requirements for future deployments using projections of those deployments. When linked together with a set of future deployments and the associated units required to support those deployments, the program could be used with few modifications.

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APPENDIX A. PROJECT CONTRIBUTORS

PROJECT CONTRIBUTORS

1. PROJECT TEAM

    a. Project Director

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APPENDIX B. SAMPLE DATA

This extract depicts the type of data from the TAPDB used in this study. The file is an Access database named STA DB.dbf. The data is in a table named STALIST and has the fields shown below. The names of the files and tables are important if the program is implemented as is. If not, the names used in the program need to be changed to reflect the location and names of the files and tables.

MOS	SSN	Deployment Date	Projected Date	Redeployment Date	Operation Type	Country	UIC	Grade
11H	57606xxxx	7/11/98	1/29/99	1/7/99	O	EG	WH9ST0	02
11H	55749 xxxx	7/11/98	1/29/99	1/7/99	O	EG	WH9ST0	04
11H	35760 xxxx	7/11/98	1/29/99	1/7/99	O	EG	WH9ST0	06
11H	44370 xxxx	7/18/98	1/29/99	1/14/99	O	EG	WH9ST0	02
11H	22827 xxxx	7/18/98	1/29/99	1/14/99	O	EG	WH9ST0	04
11H	45743 xxxx	7/18/98	1/29/99	1/14/99	O	EG	WH9ST0	04
11H	45737 xxxx	7/18/98	1/29/99	1/14/99	O	EG	WH9ST0	04
11H	10662 xxxx	7/18/98	1/29/99	1/14/99	O	EG	WH9ST0	03
11H	35068 xxxx	7/18/98	1/29/99	1/14/99	O	EG	WH9ST0	03
11H	27482 xxxx	9/6/98			O	BK	WH6BD0	04
11H	38194 xxxx	9/22/98			O	BK	WBHNB0	04
11M	20156 xxxx	9/10/92		3/8/93	O	SA	W19JAA	05
11M	37278 xxxx	9/10/92		3/8/93	O	SA	WA4FA0	05
11M	59405 xxxx	9/10/92		3/8/93	O	SA	WEZKC0	05
11M	44935 xxxx	9/10/92		3/8/93	O	SA	WEZKC0	05
11M	41708 xxxx	9/10/92		3/8/93	O	SA	WEZKC0	06
11M	26651 xxxx	12/12/92		6/9/93	O	SA	W0G2AA	07
11M	30382 xxxx	12/12/92		6/9/93	O	SA	WAGNC0	06

The columns are military occupational specialty, social security number, deployment date, projected redeployment date, actual redeployment date, the type of operation, the country code in which the operation takes place, the unit identification code to which the soldier is assigned, and the soldier's pay grade.

The following extract shows the data structure for the MOS strength by year. This data file is name MOSstren.xls and has a separate data sheet, with the four-digit year as the sheet name, for each year of deployments.

| Date	MOS	Grade	Count
12/31/98	11H	5	279
12/31/98	11H	6	375
12/31/98	11H	7	263
12/31/98	11H	8	74
1/31/98	11M	1	535
1/31/98	11M	2	1842
1/31/98	11M	3	1912
1/31/98	11M	4	3249

For each year, the end of month total strengths are shown for each MOS by pay grade. The program currently totals across all grades in the MOS, which obscures some data. If desired, the program can be changed to report by MOS and grade or skill level.
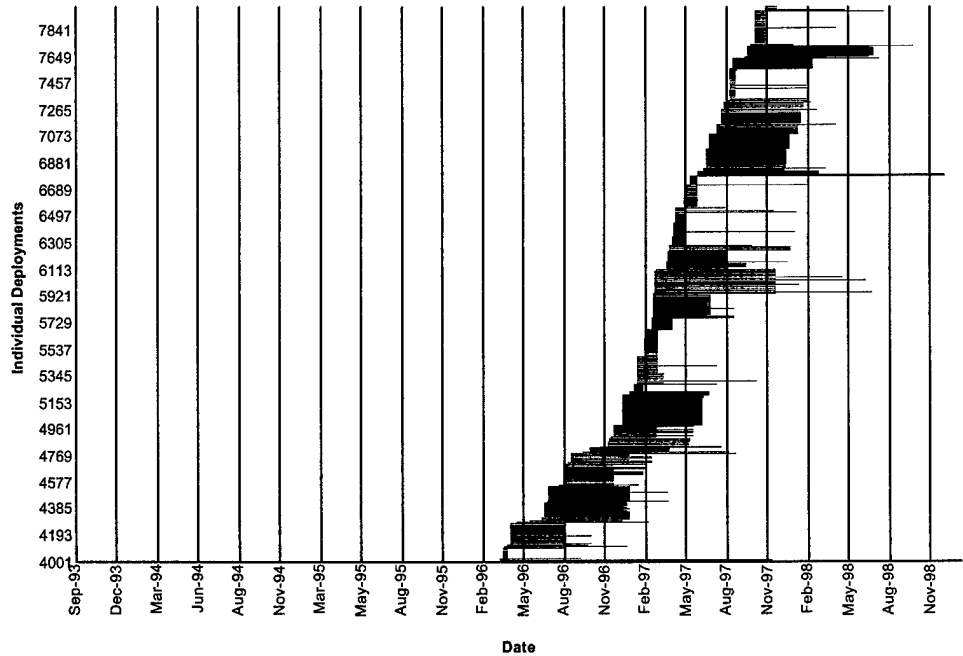
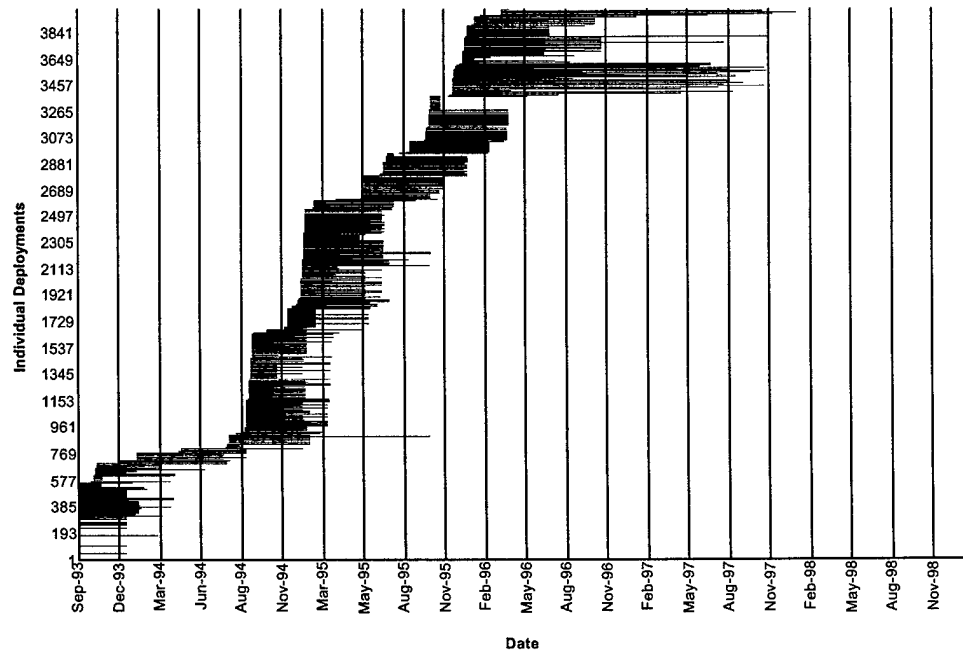# APPENDIX C. DEPLOYMENT CHARTS

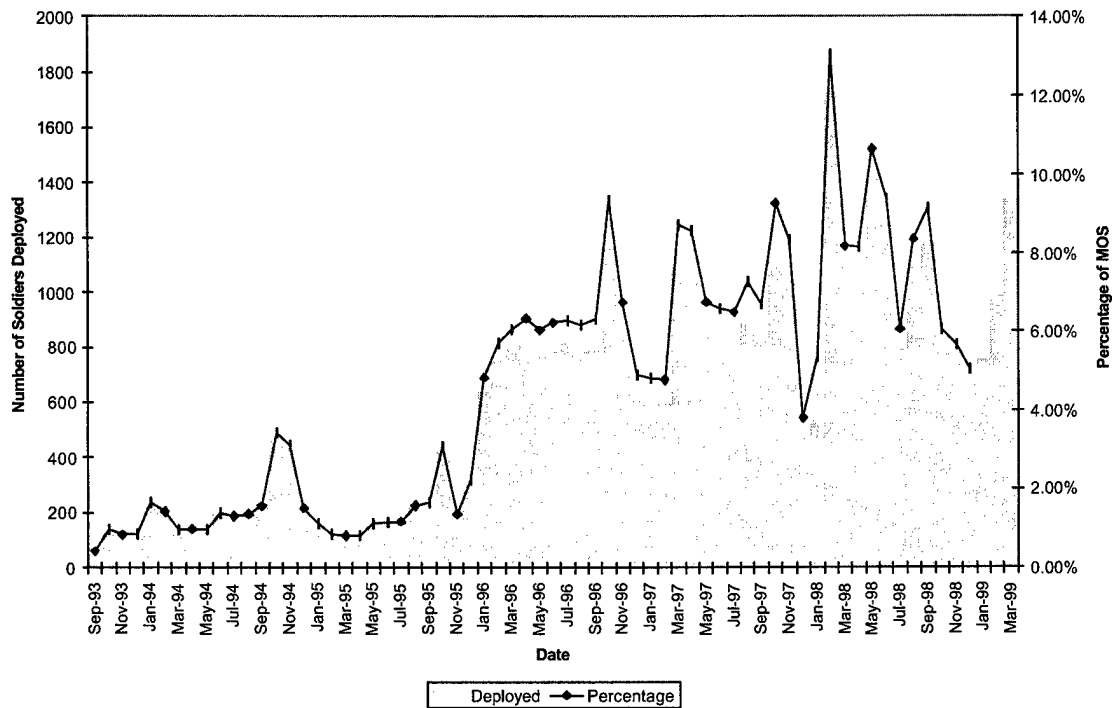**11B Infantryman Deployment Profile**

Date

Deployed ◆ Percentage

11B InfantrymanDeployments (cont.)

Date
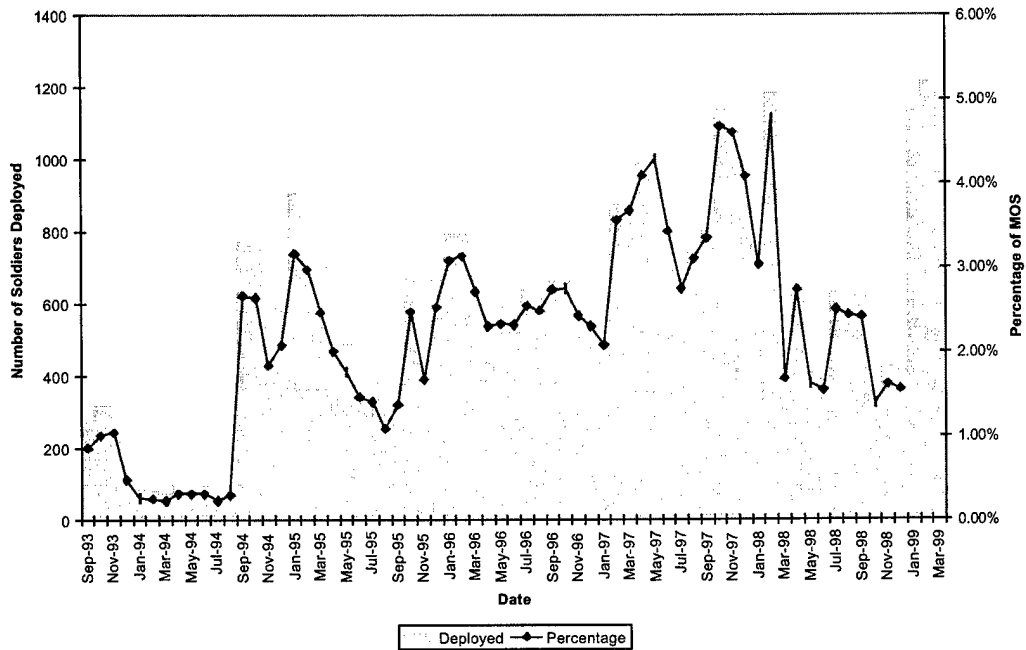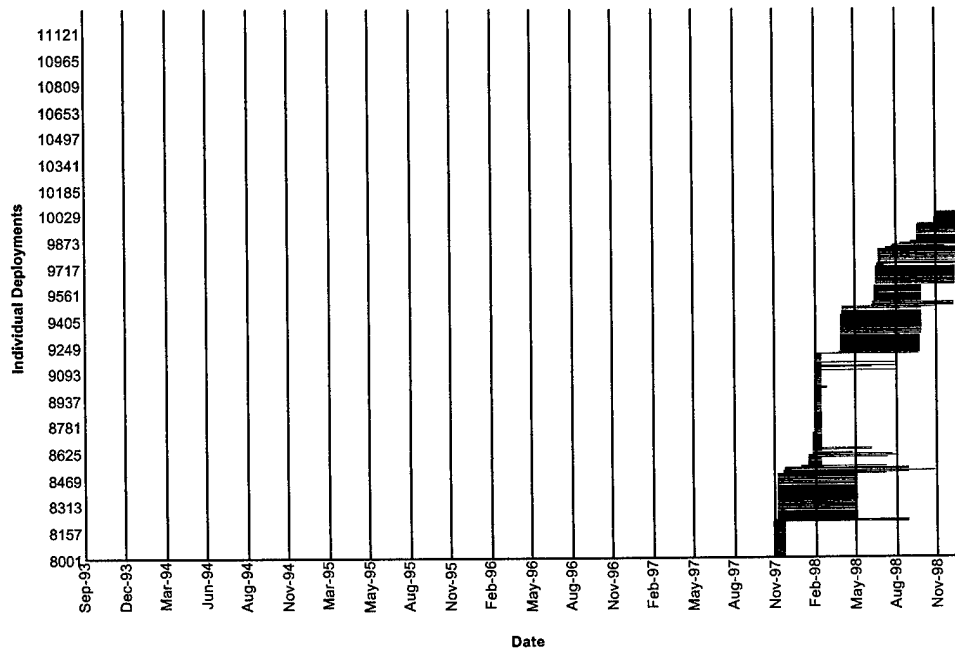
11B InfantrymanDeployments (cont.)

11B Infantryman Deployments

11M Fighting Vehicle Infantryman Deployment Profile

Deployed —◆— Percentage

11M Fighting Vehicle InfantrymanDeployments (cont.)
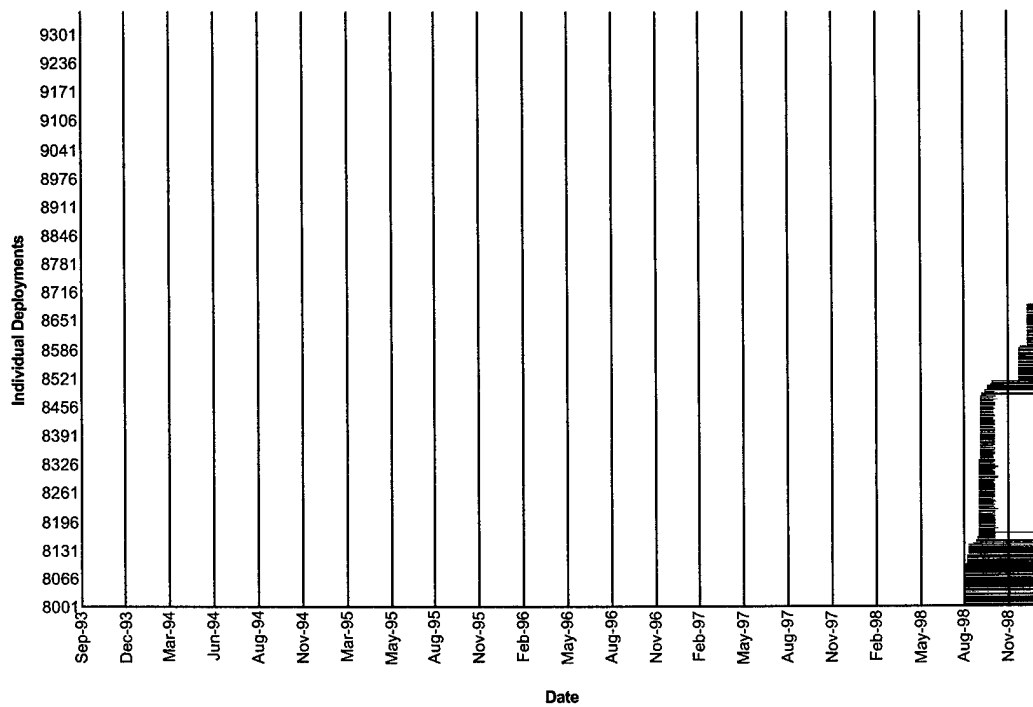
11M Fighting Vehicle InfantrymanDeployments (cont.)
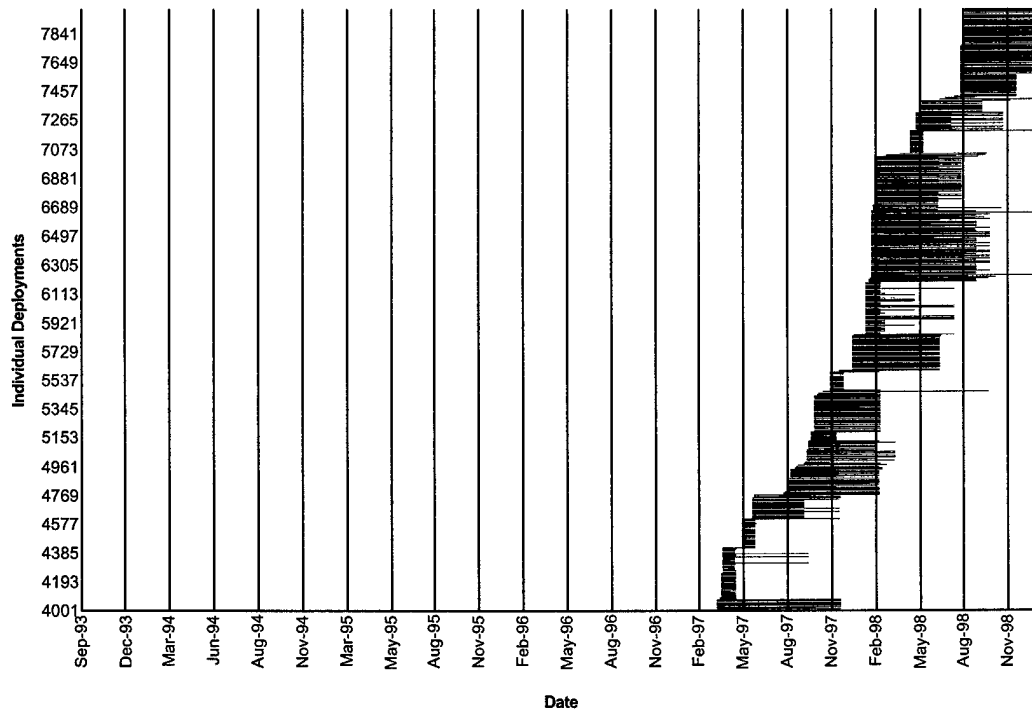
11M Fighting Vehicle Infantryman Deployments
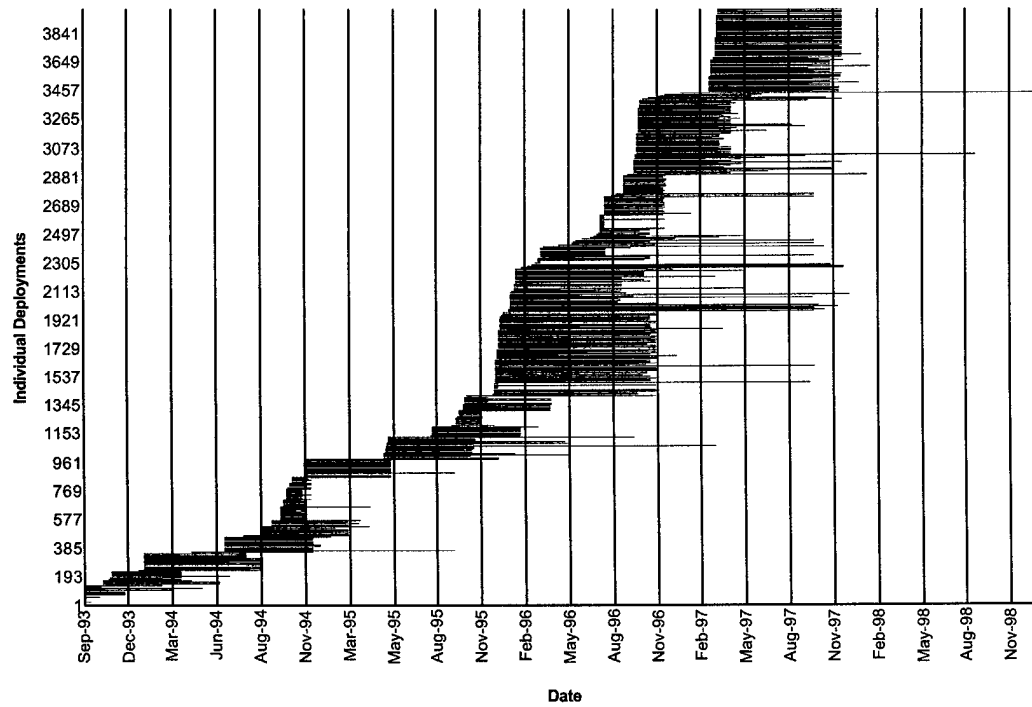
12C Bridge Crewman Deployment Profile
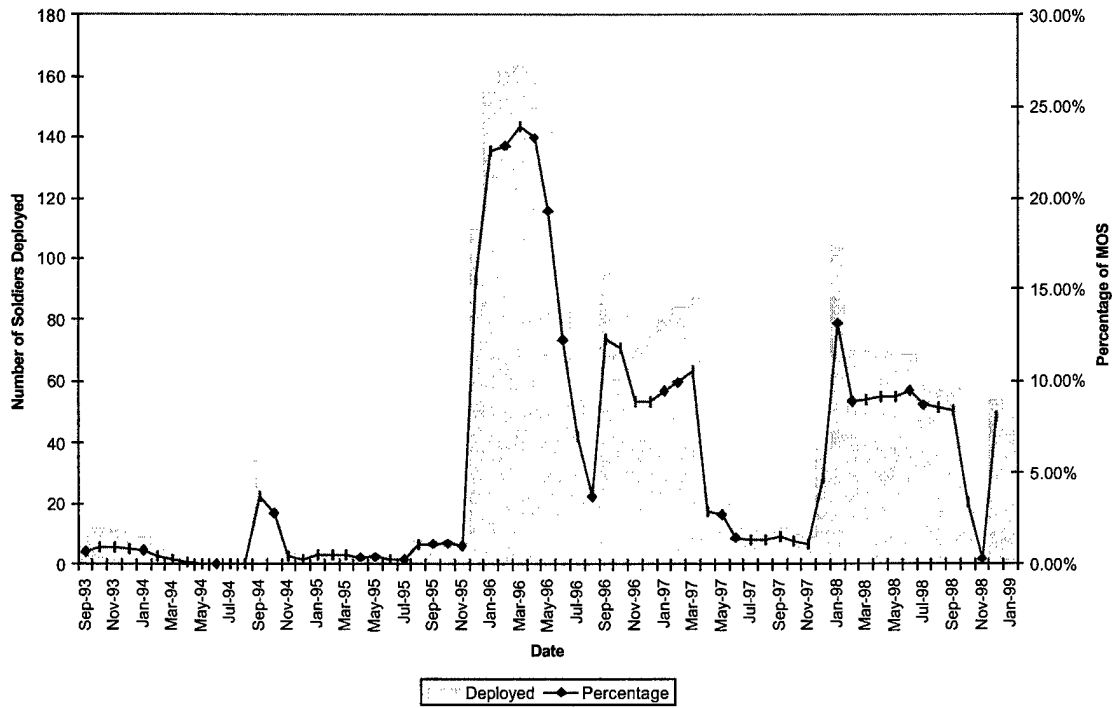
12C Bridge Crewman Deployments
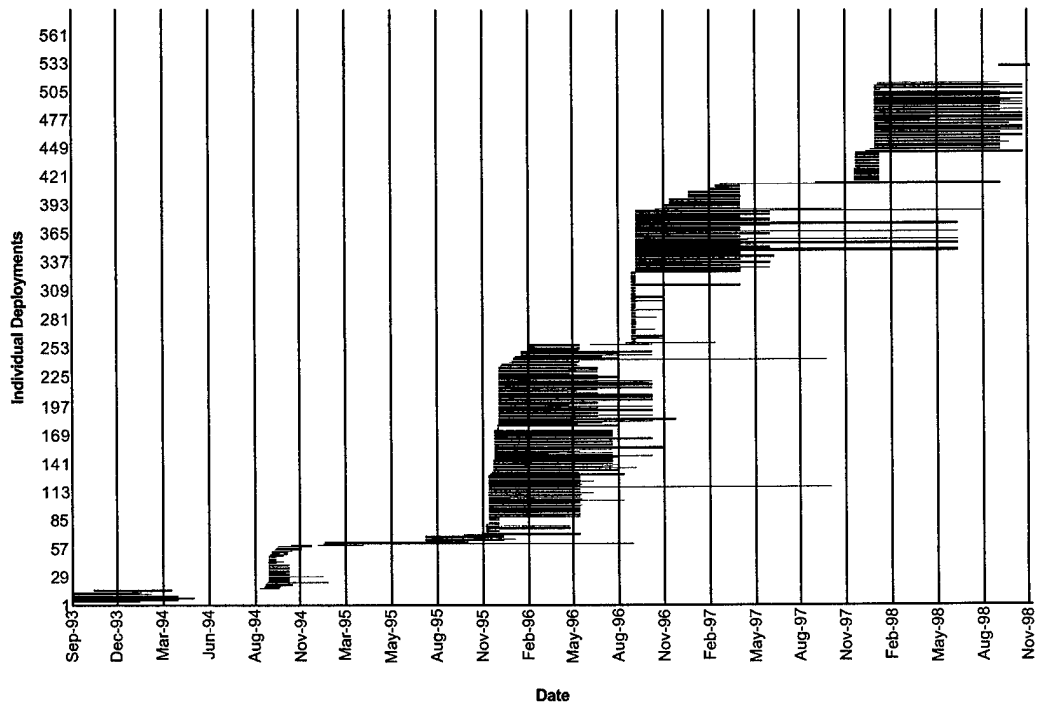
14T Air Defense Crewman Deployment Profile

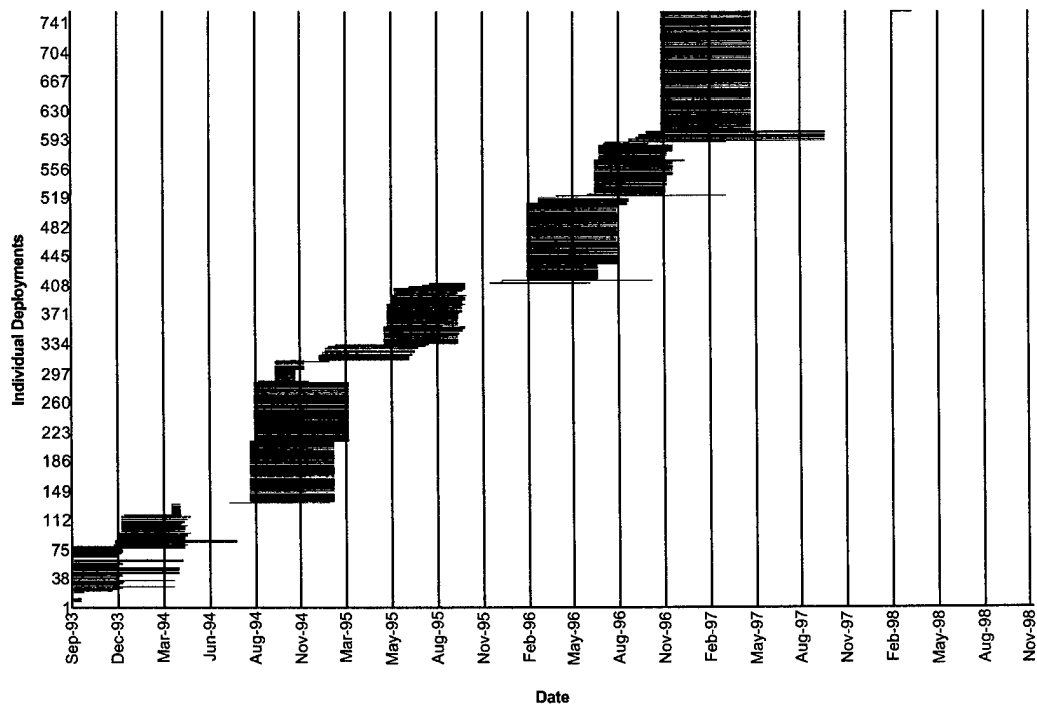**14T Air Defense Crewman Deployments**
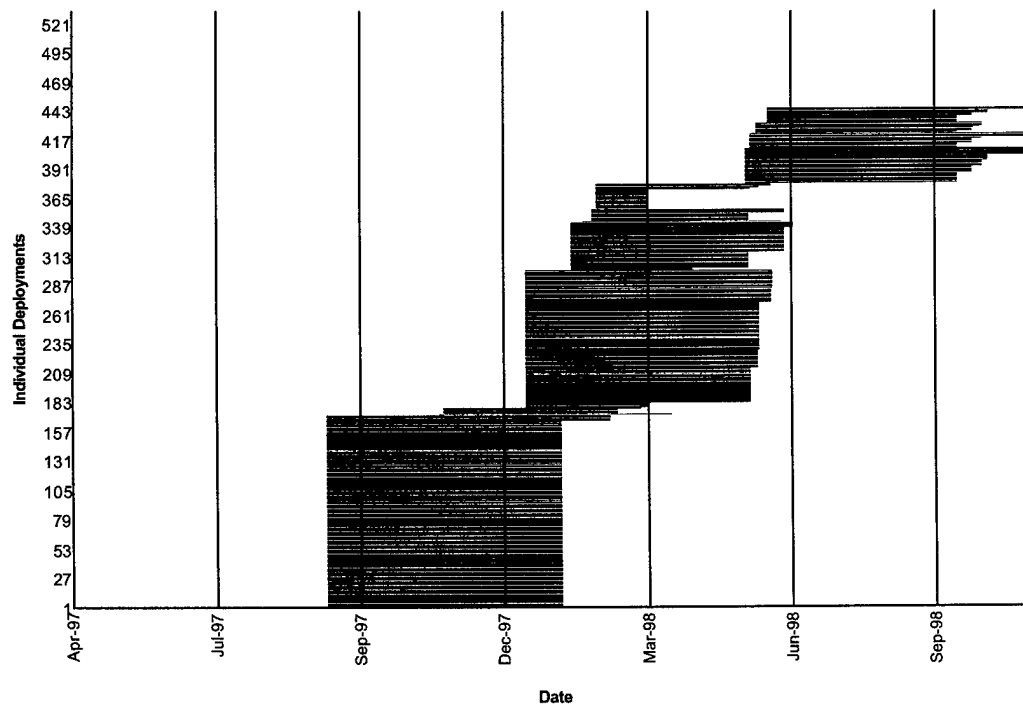
15 Aviator Deployment Profile

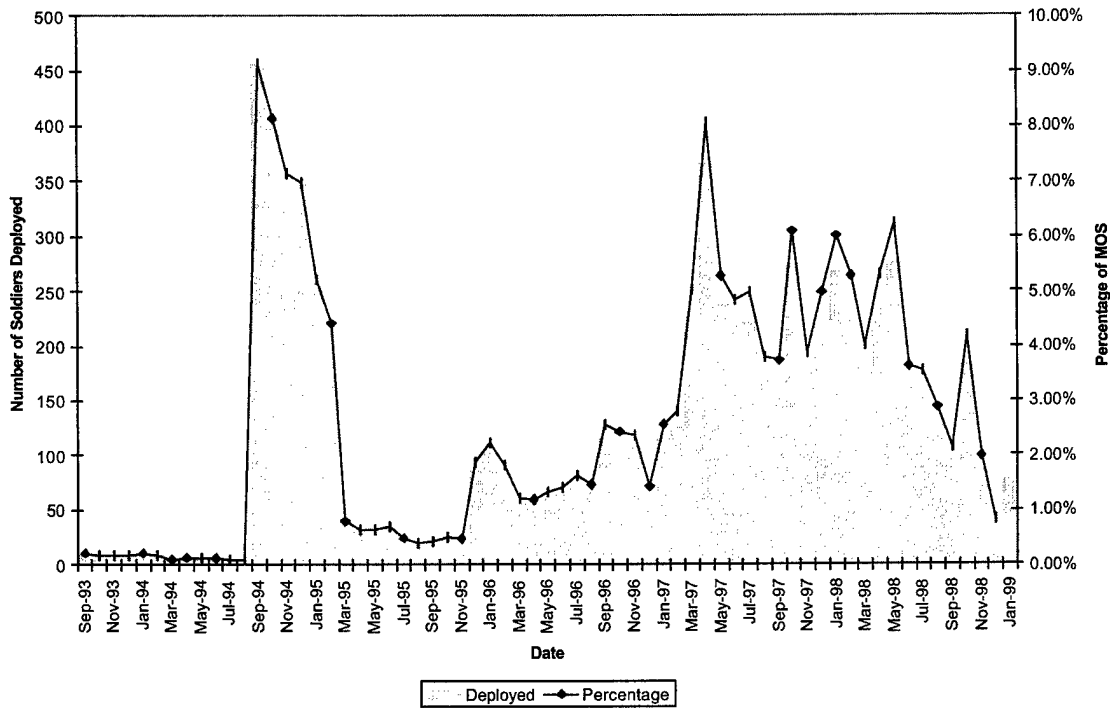Deployed ——— Percentage
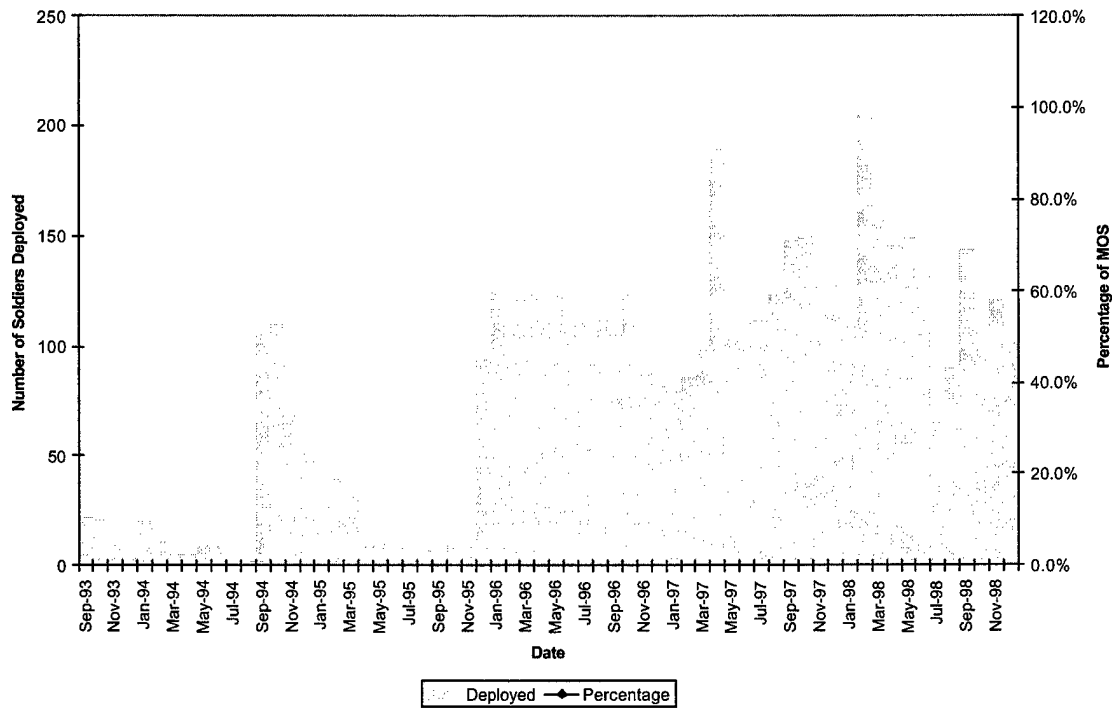
15 Aviator Deployments
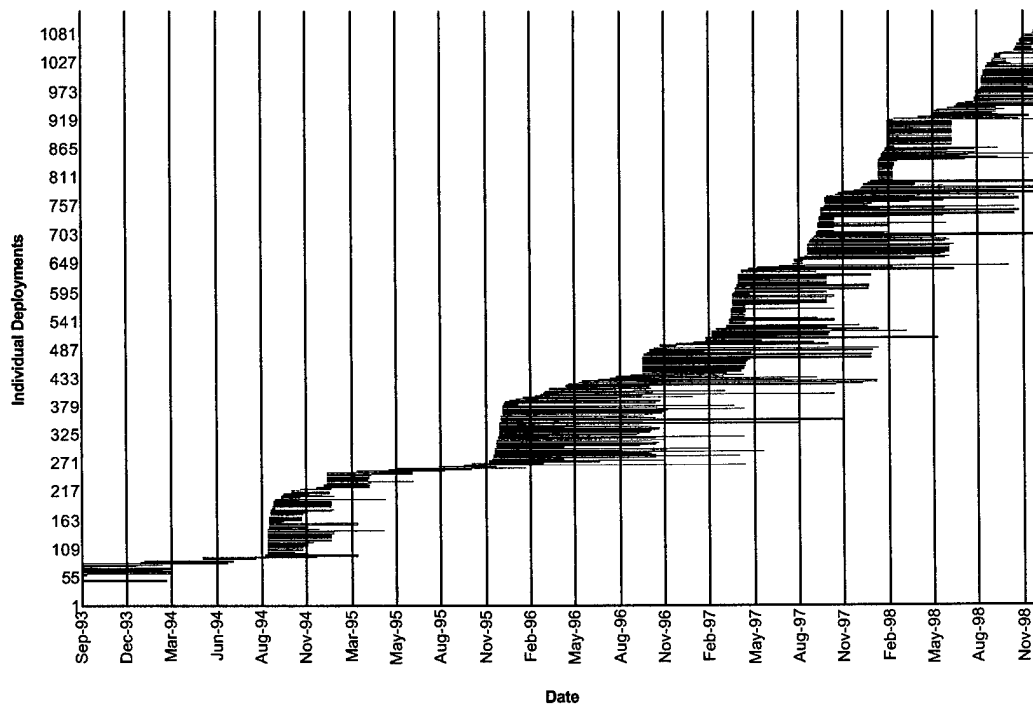
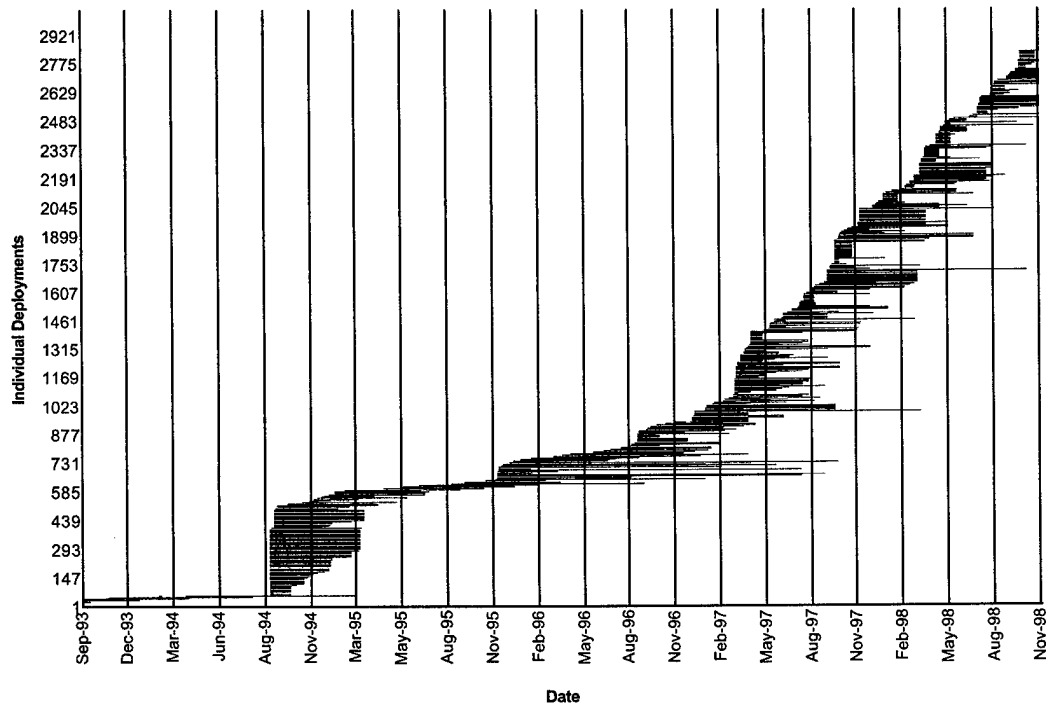**16T Patriot Missile Crewman Deployment Profile**
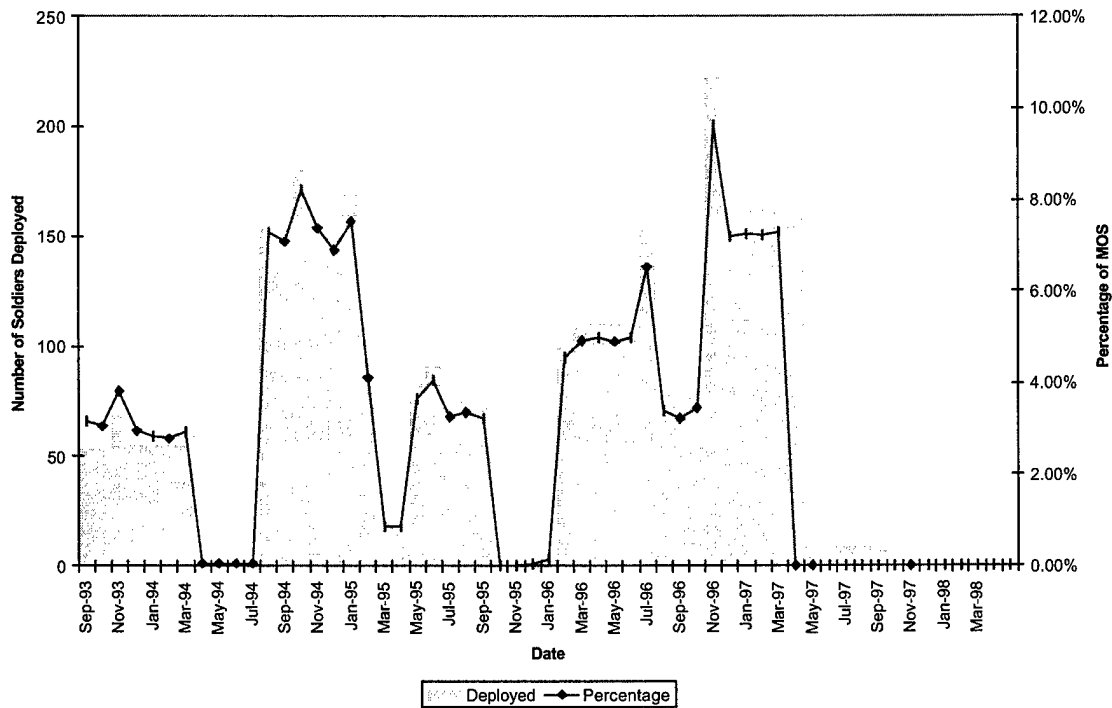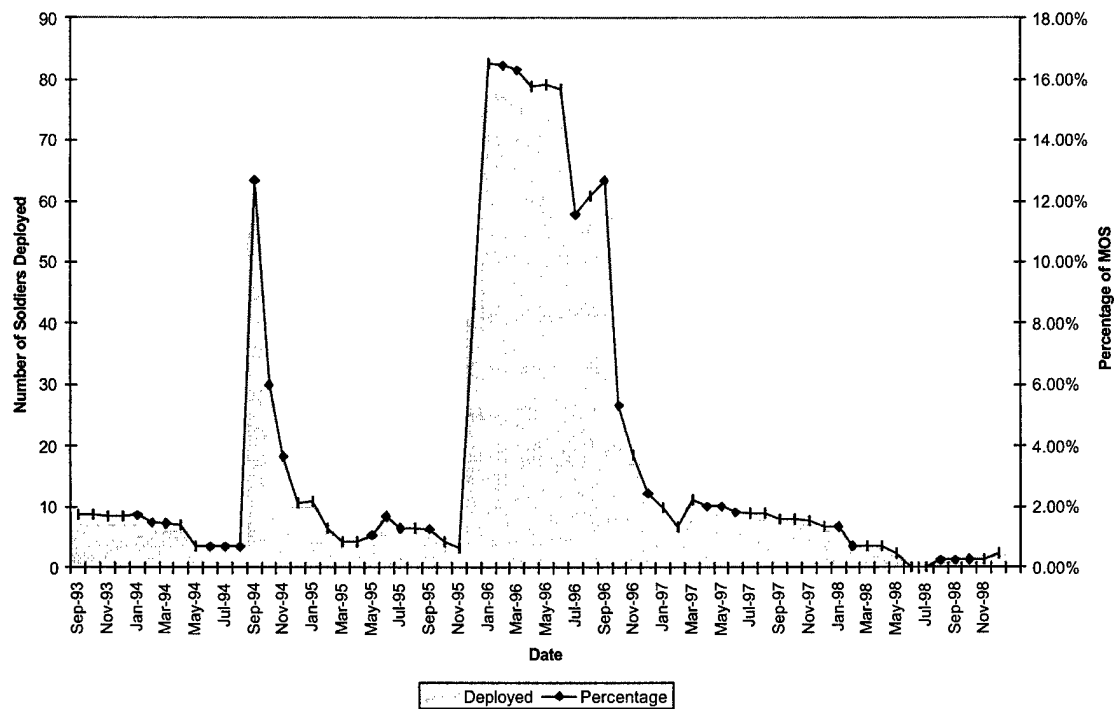

16T Patriot Missile Crewman Deployments

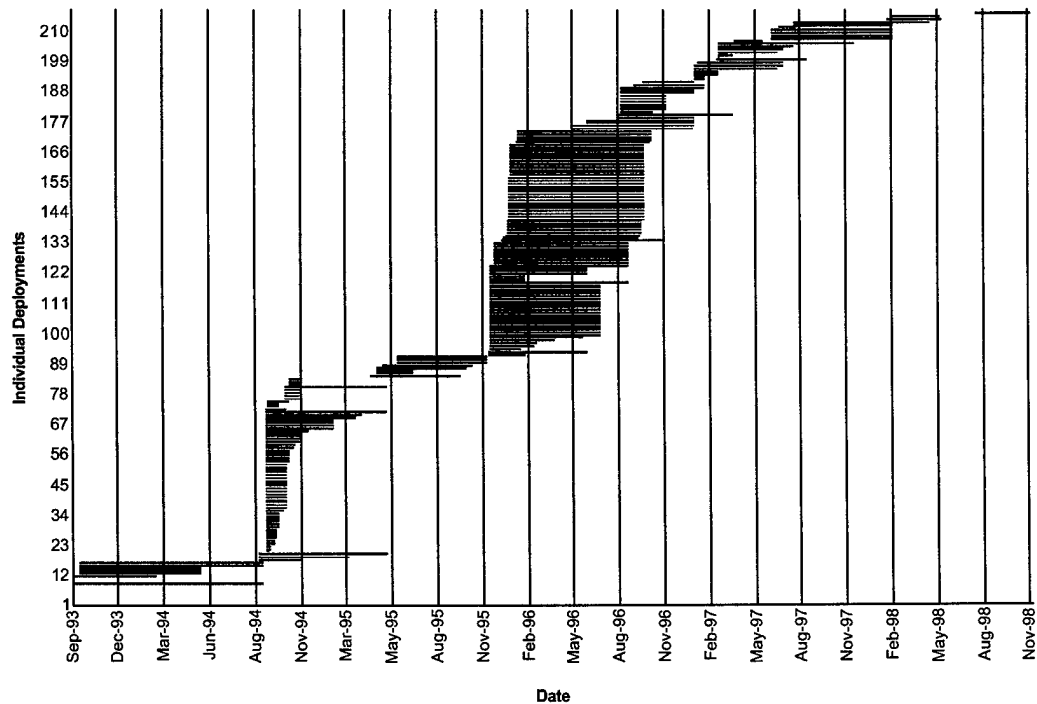**CMF18 Special Forces Sergeant Deployment Profile**
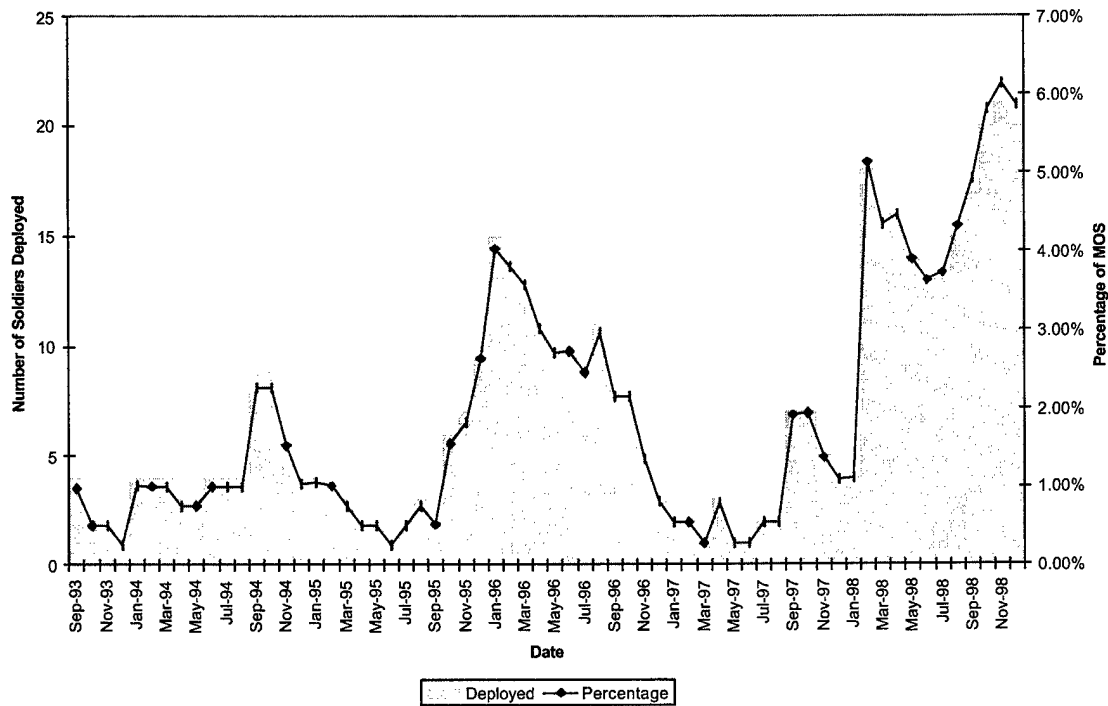

CMF 18 Special Forces Sergeant Deployments

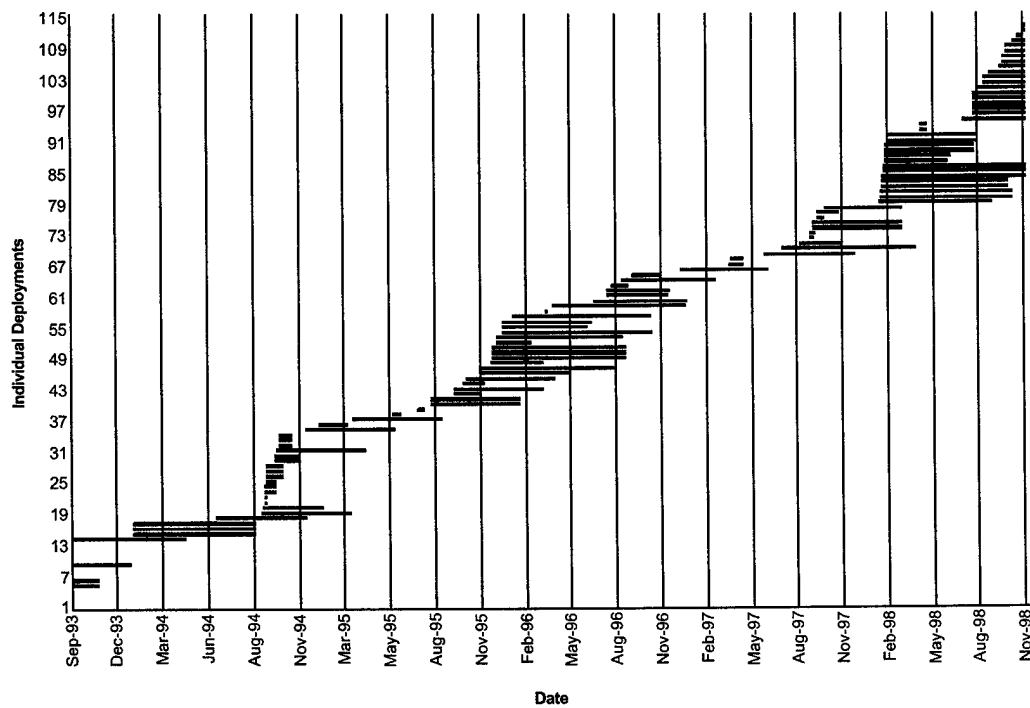**37F Psychological Operations Specialist Deployment Profile**

37F Psychological Operations Specialist Deployments

46Q Journalist Deployment Profile

46Q Journalist Deployments

39B Automatic Test Equipment Operator/Maintainer Deployment Profile
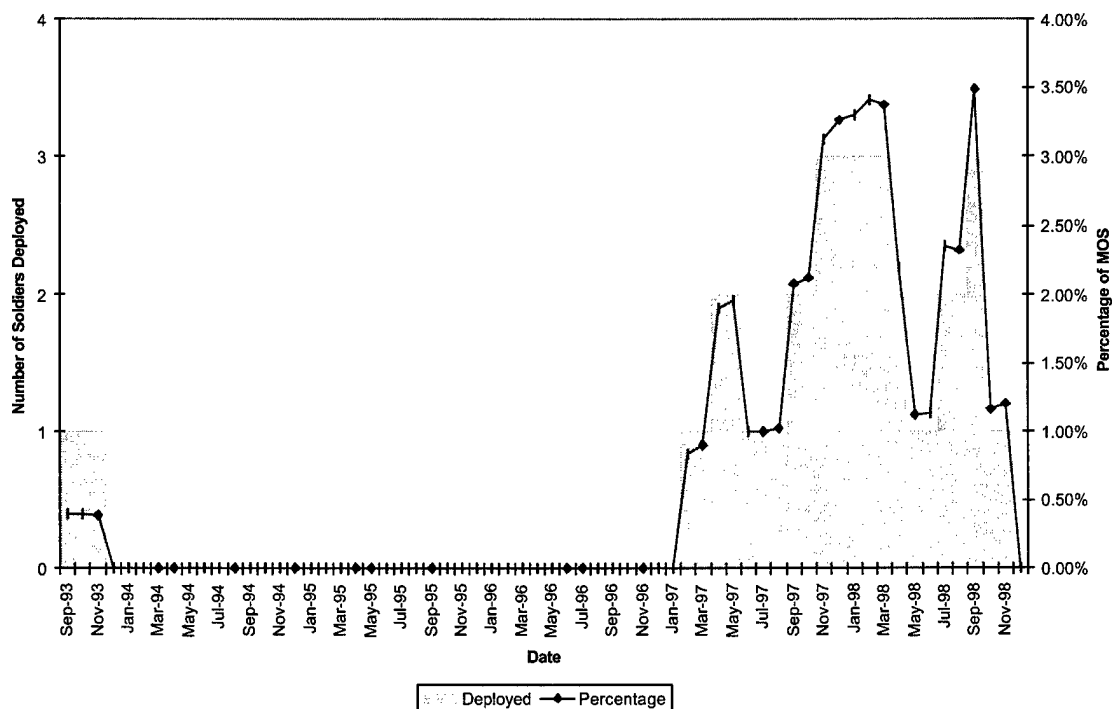
39B Automatic Test Equipment Operator/Maintainer Deployments
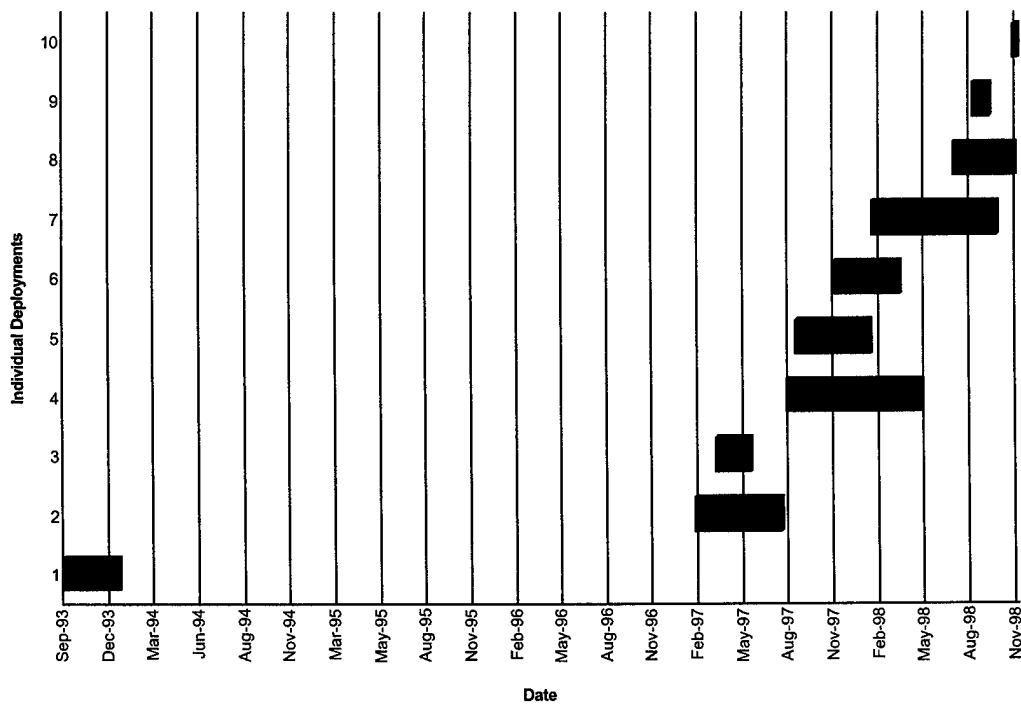
67 CMF Aviation Mechanic Deployment Profile
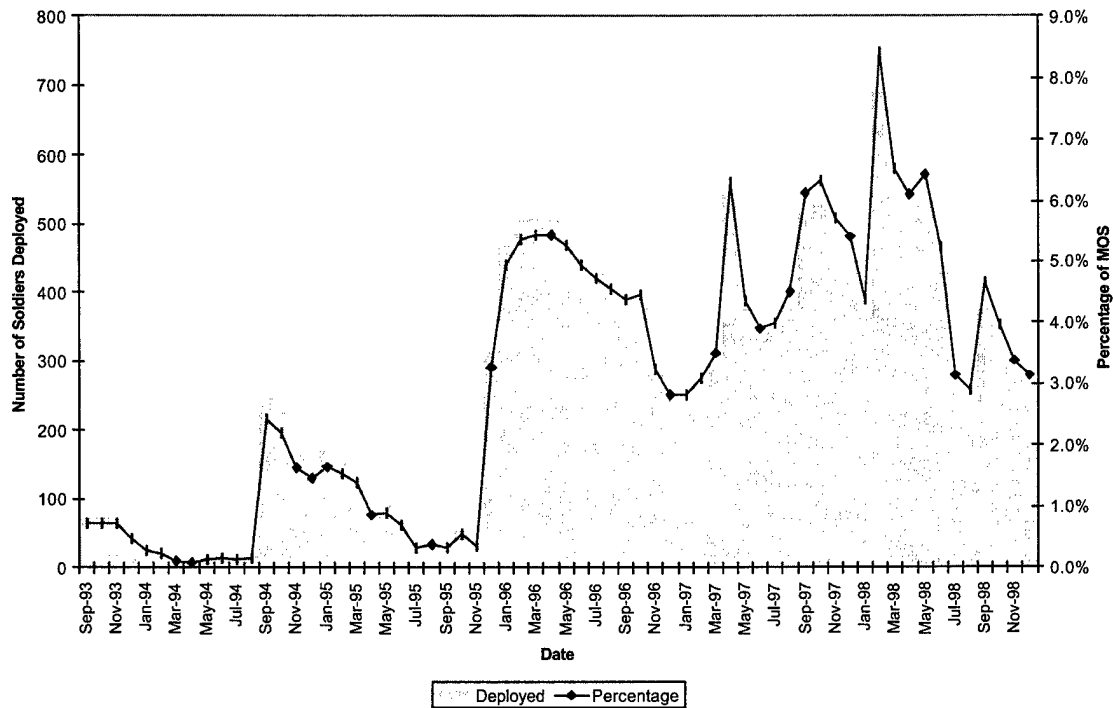
67 CMF Aviation Mechanic Deployments
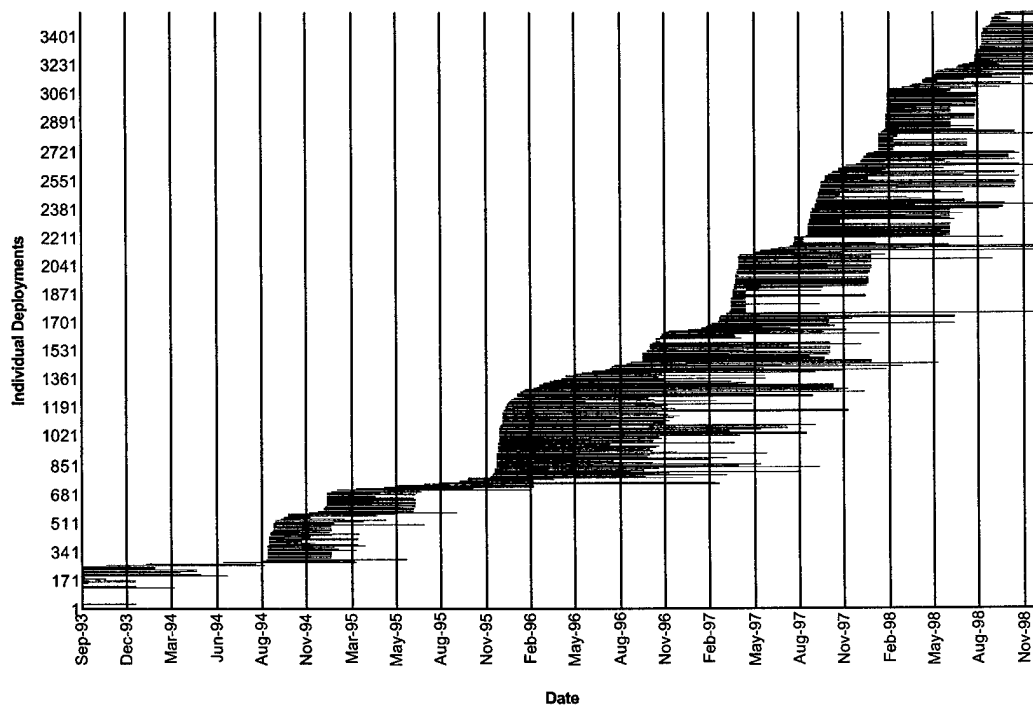
77W Water Treatment Specialist Deployment Profile
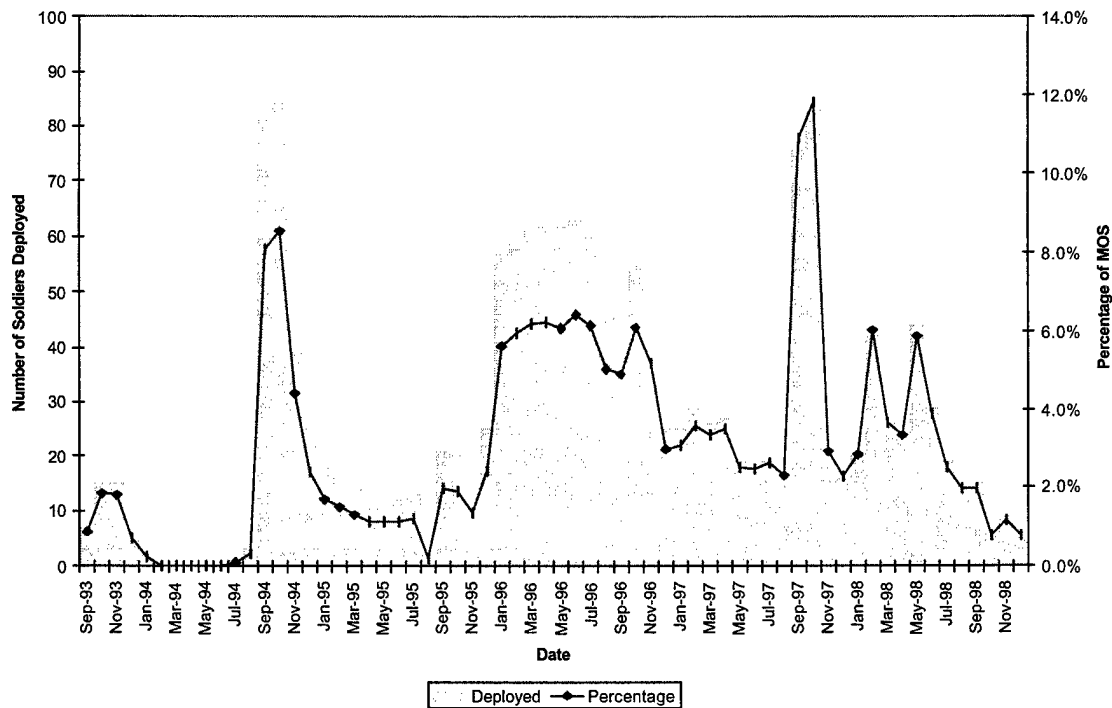
77W Water Treatment Specialist Deployments
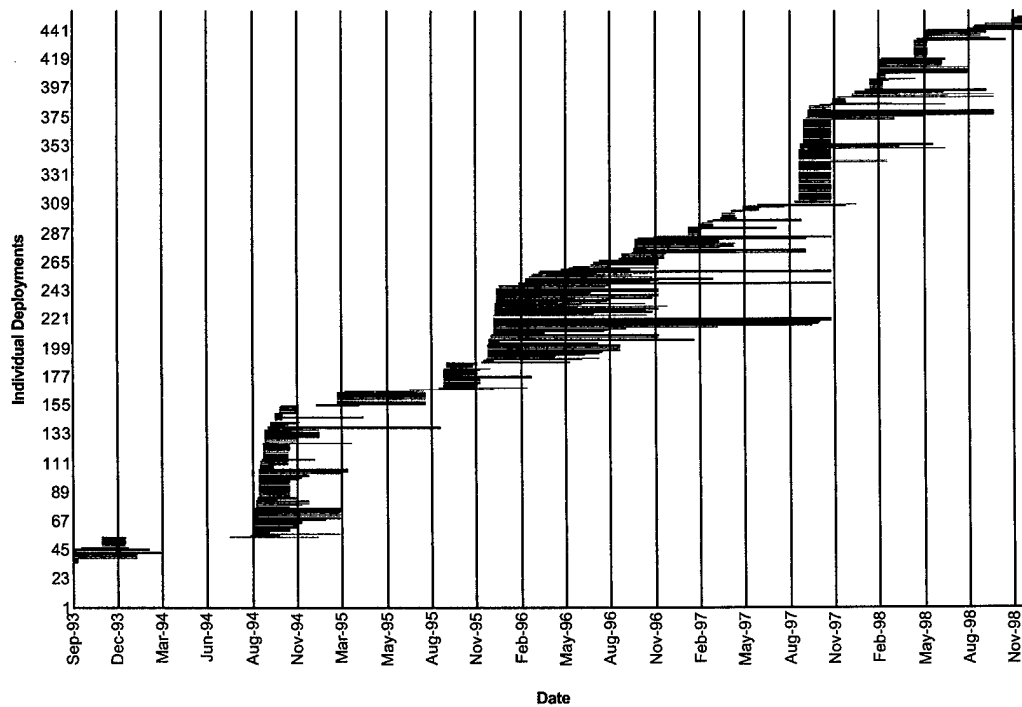
88M Motor Transport Operator Deployment Profile
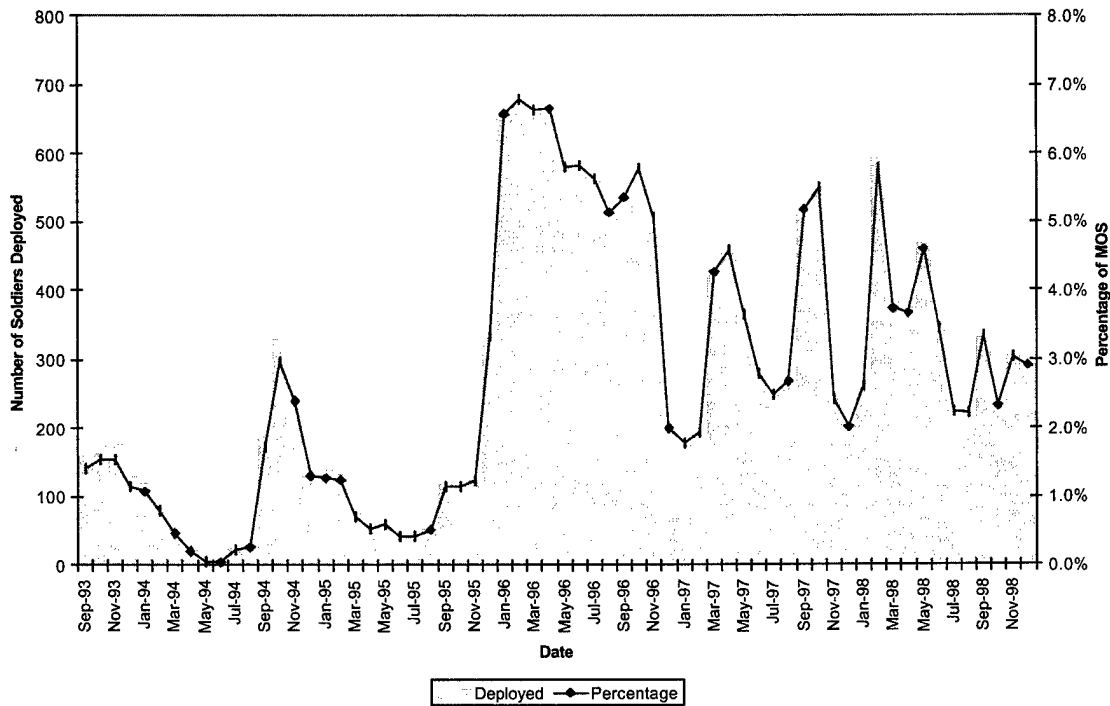
88M Motor Transport OperatorDeployments (cont.)
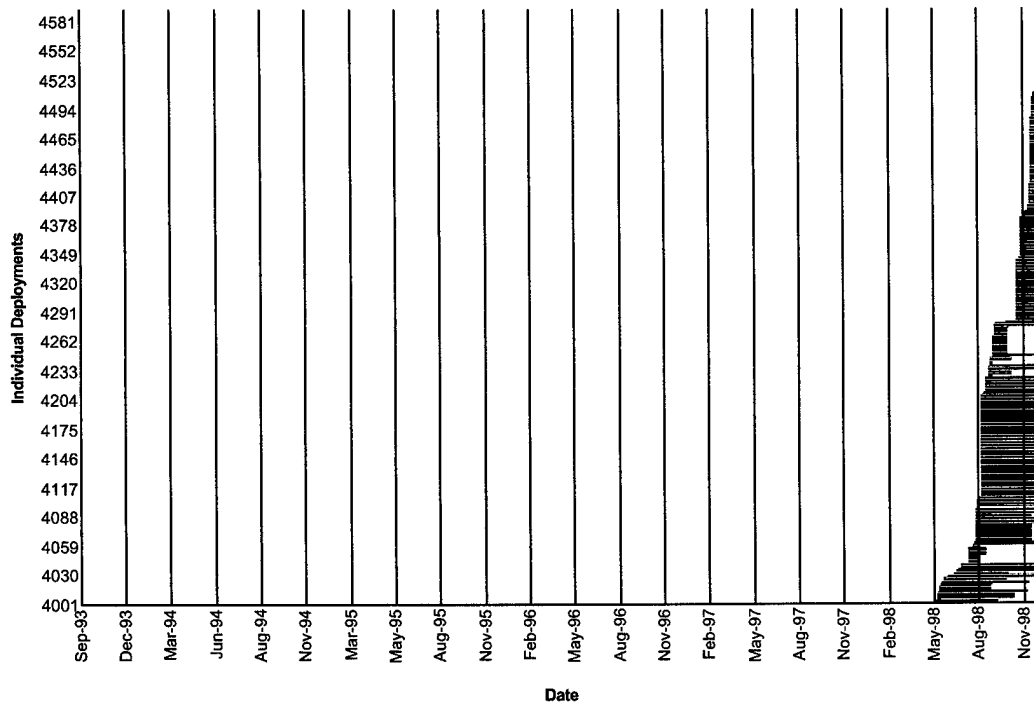
88M Motor Transport Operator Deployments
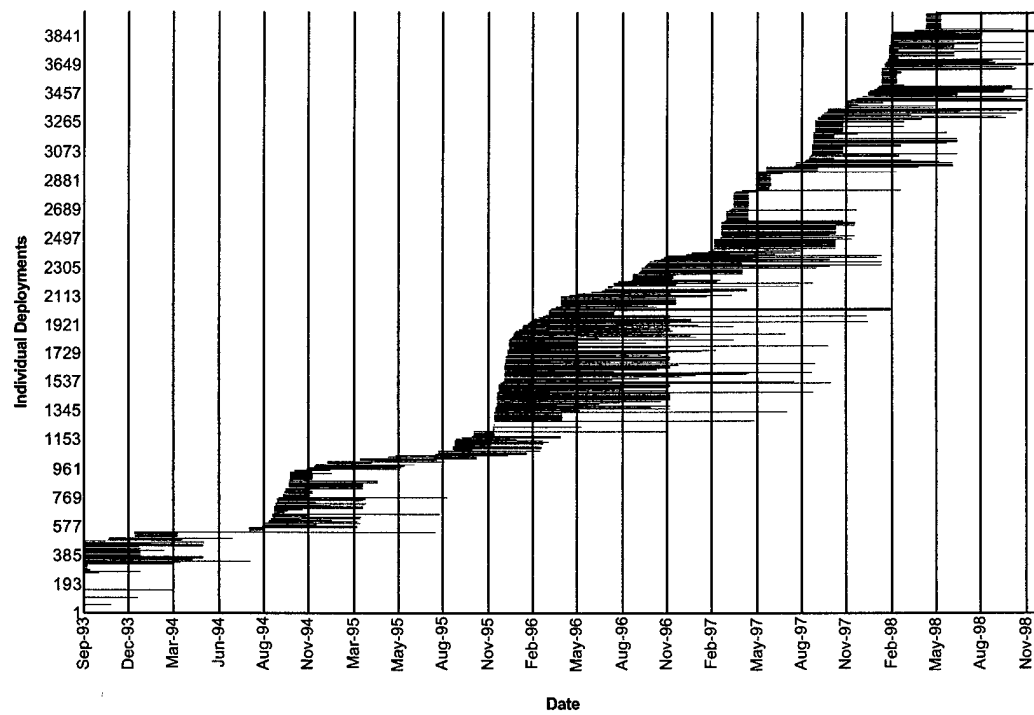
95B Military Police Deployment Profile

Deployed ◆ Percentage
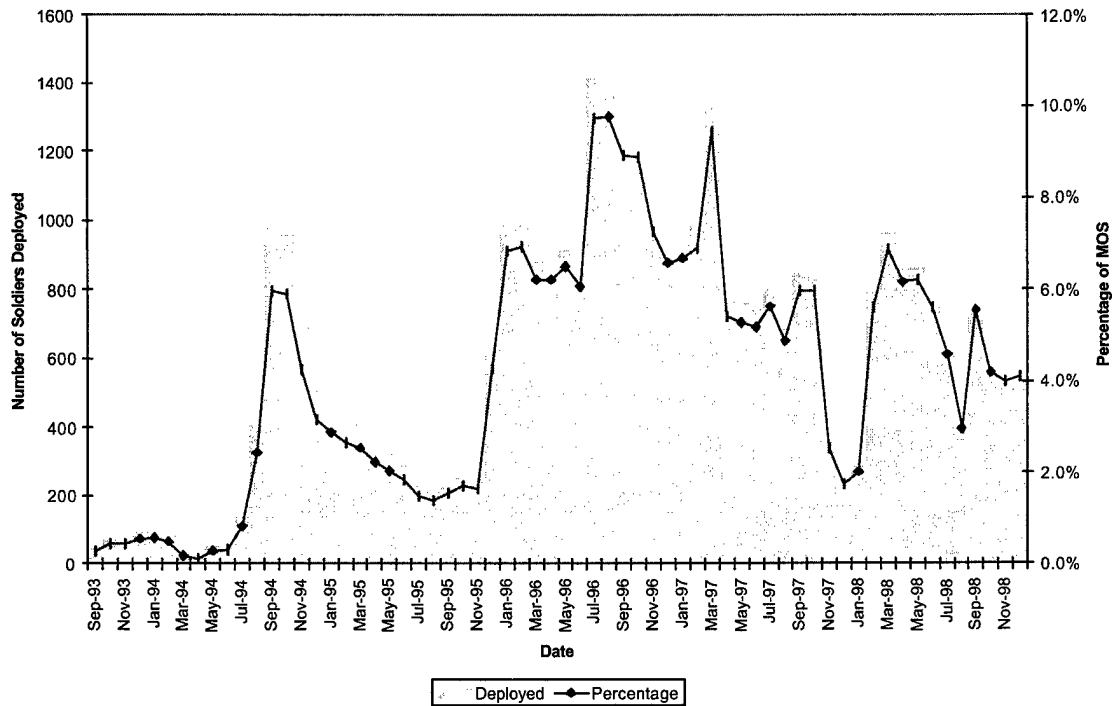
95B Military PoliceDeployments (cont.)
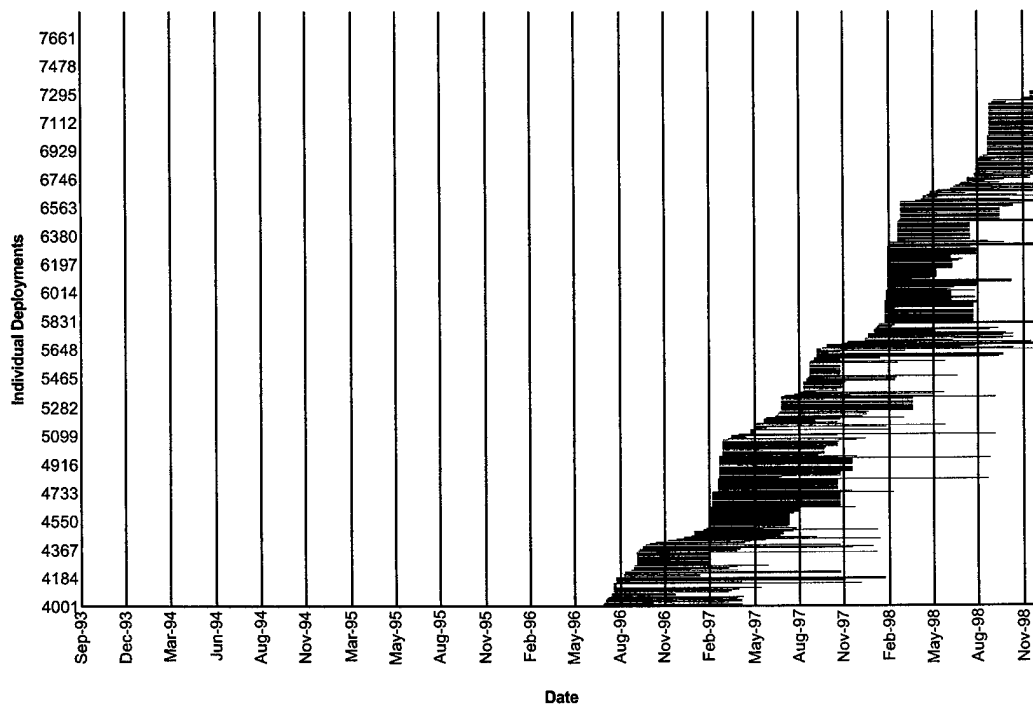
95B Military Police Deployments
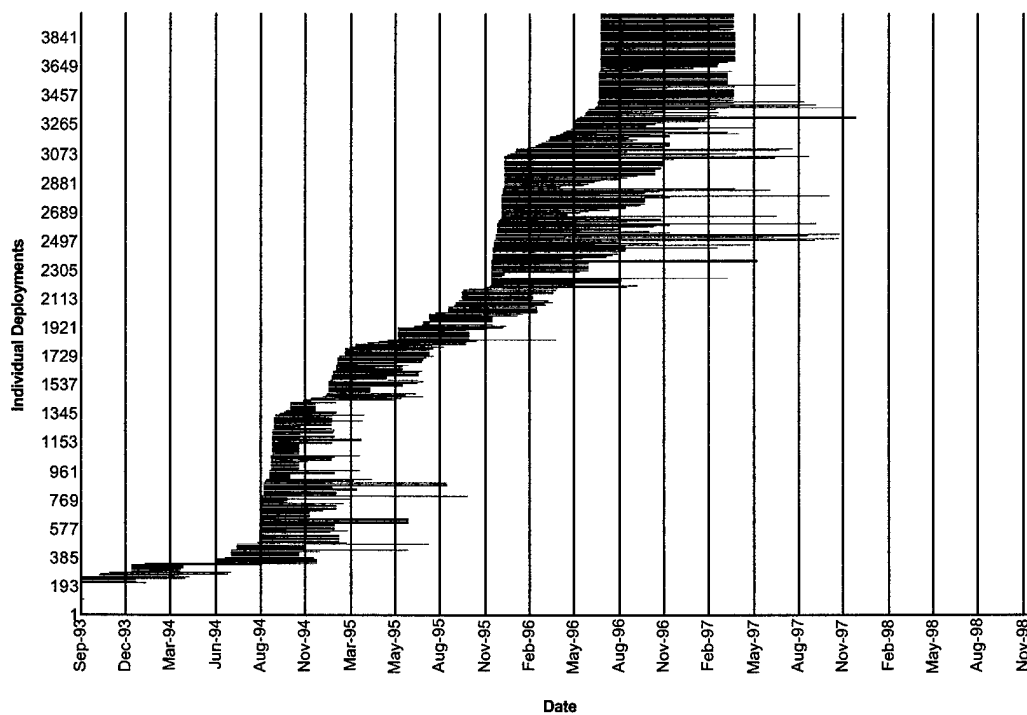
97B Counterintelligence Agent Deployment Profile
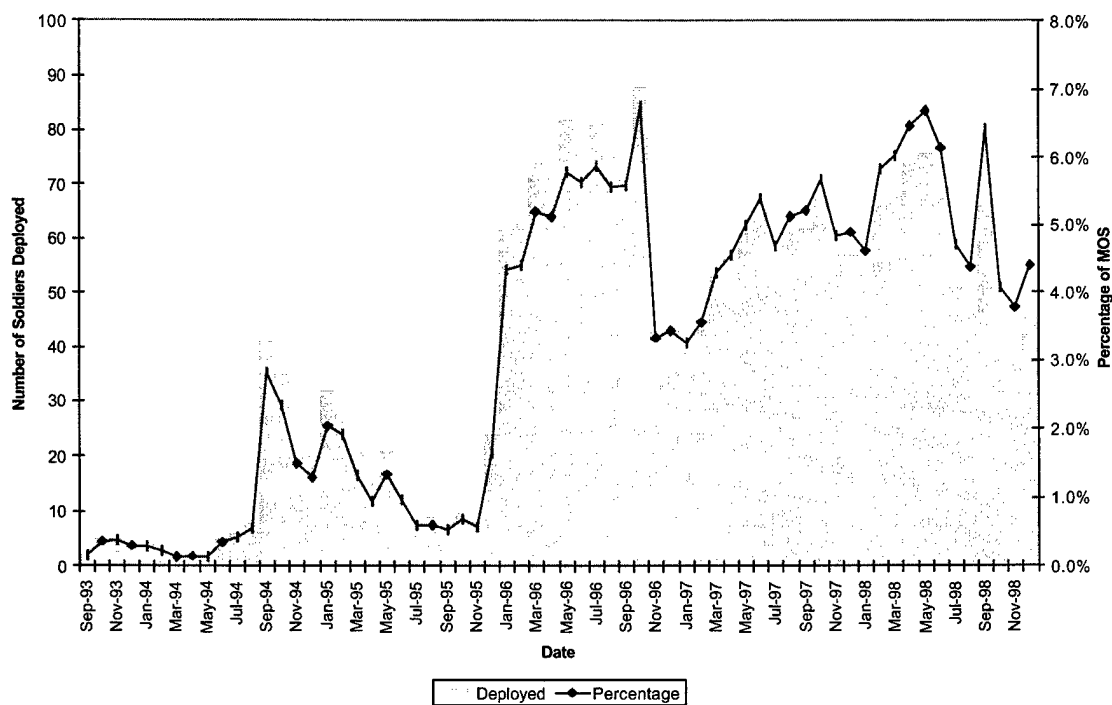
97B Counterintelligence Agent Deployments
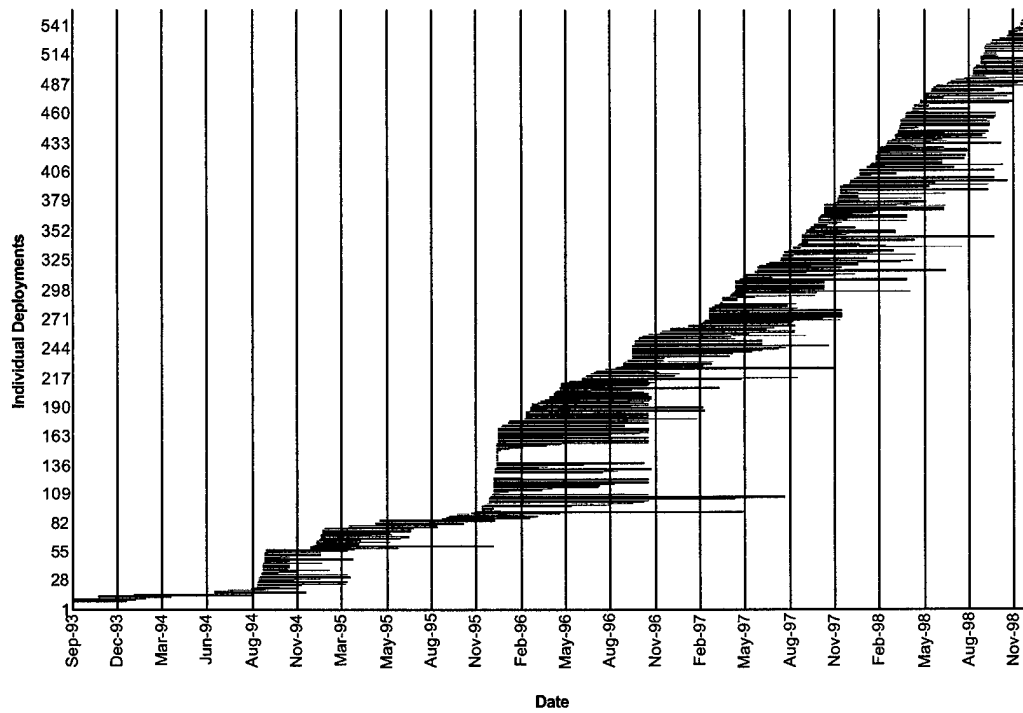
97E Interrogator Deployment Profile
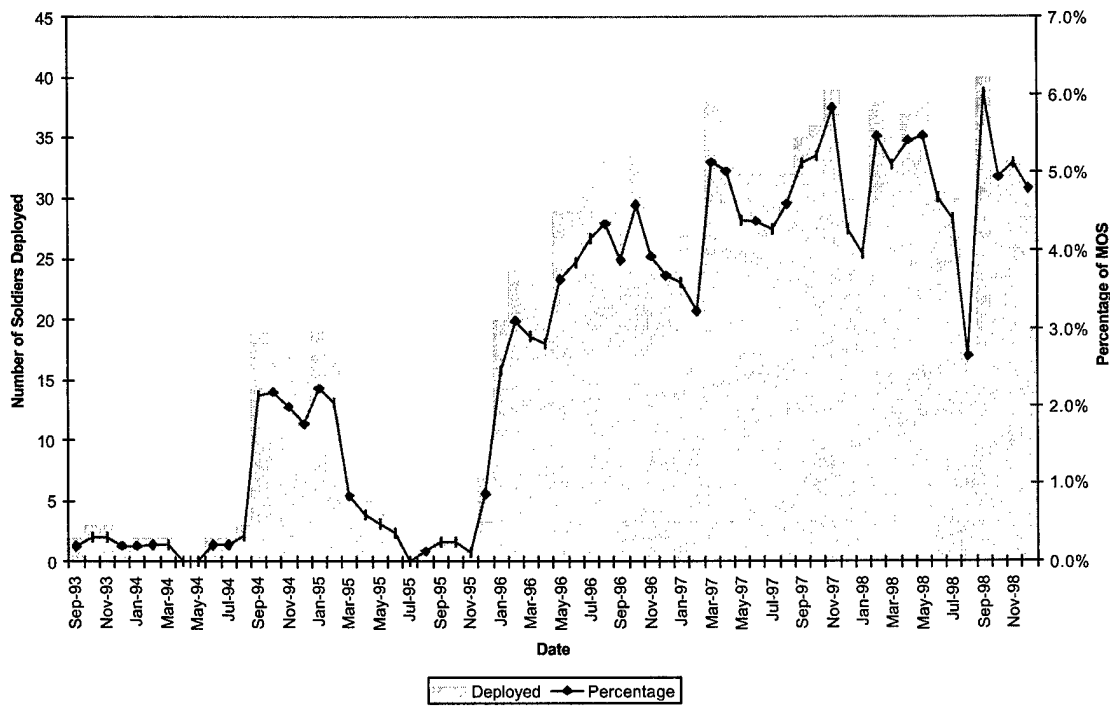
98 CMF Signal Intelligence Deployment Profile
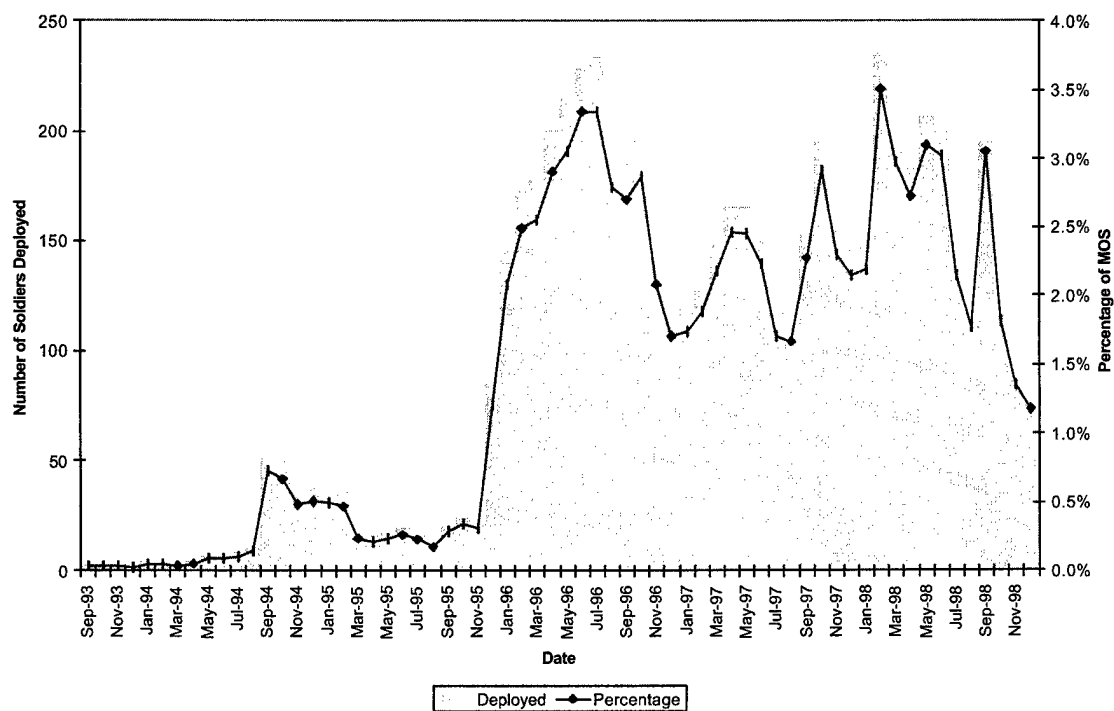
98 CMF Signal Intelligence Deployments
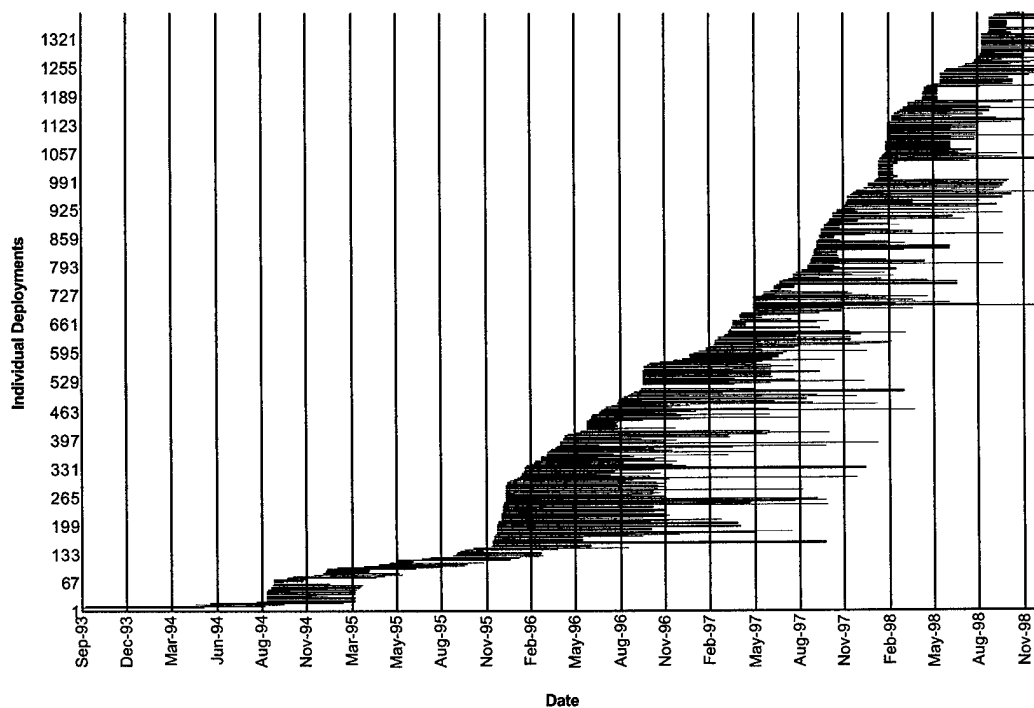
APPENDIX D. PROGRAM CODE

The following Microsoft Excel macro is used to generate the charts described in the report. File paths are specified, and the code should be changed to reflect the file structure on the computer used to generate the charts.

```
Public MOS, desc As String
Public BonCancel As Boolean
Public start, halt As Date

                    'As of 6/28/00
' modifications
' - now able to handle either a specific MOS or a CMF
' - asks user to locate the MOSstren.xls file rather than coding in a location
' - runs the dates out to the end date even if the last deployment is before that date


Sub RunIt()
   DepProfile
End Sub


Sub DepProfile()
'
' A Macro to construct charts for STA
' Macro written 4/5/99 by Bob Steinrauf
'
Dim n As Integer
Dim Mon, Yr As Integer
Dim FirstYear, FirstMonth, LastYear, LastMonth As Integer
   BonCancel = False

'   response = MsgBox("If the selected sheet does not contain the data" & Chr(10) _
       & "you want to process, please click 'cancel'," & Chr(10) _
       & "select the appropriate sheet, and rerun the macro.", vbOKCancel, _
       "Datasheet Check")
'   If response = vbCancel Then GoTo 99

'check for the MOS and description

   Load MOSInfo 'a userform
   MOSInfo.Show

   If BonCancel = True Then GoTo 99

   MOS = MOSInfo.TextBox1.Value
   desc = MOSInfo.TextBox2.Value

'Add a new workbook for the MOS

   Workbooks.Add
   Sheets("Sheet1").Select
   Sheets("Sheet1").Name = "RawData"

' takes existing data with the individual deployment (Col A) and
' redeployment dates (Col B).  It then converts the deployment information
' into data for the deployment profile
   ActiveSheet.Name = "RawData"


' ACCESS QUERY
   With ActiveSheet.QueryTables.Add(Connection:=Array(Array( _
       "ODBC;DSN=MS Access 97 Database;DBQ=C:\My Documents\STA\SKILLTEMPO\STA DB.mdb;DefaultDir=C:\My
Documents\STA\SKILLTEMPO;DriverId=281;" _
       ), Array("FIL=MS Access;MaxBufferSize=2048;PageTimeout=5;")), Destination:= _
```

```
        Range("A1"))
        .Sql = Array(_
        "SELECT STALIST.MOS, STALIST.`Deployment Date`, STALIST.`Redeployment Date`" _
        & Chr(13) & "" & Chr(10) & "FROM `C:\My Documents\STA\SKILLTEMPO\STA DB`.STALIST STALIST" _
        & Chr(13) & "" & Chr(10) & "WHERE (STALIST.MOS like " & "'" & MOS & "%')")
        .FieldNames = True
        .RefreshStyle = xlInsertDeleteCells
        .RowNumbers = False
        .FillAdjacentFormulas = False
        .RefreshOnFileOpen = False
        .HasAutoFormat = True
        .BackgroundQuery = True
        .TablesOnlyFromHTML = True
        .Refresh BackgroundQuery:=False
        .SavePassword = True
        .SaveData = True
    End With

'delete MOS column
    Columns("A:A").Select
    Selection.Delete Shift:=xlToLeft
'format date
    Columns("A:B").Select
    Selection.NumberFormat = "mm/dd/yy"
    Selection.Copy
    Sheets.Add
    ActiveSheet.Paste
    ActiveSheet.Name = "ProfileData"

'determine number of entries
    Range("A2", Range("A2").End(xlDown)).Select
    NumRows = Selection.Rows.Count
    Range("C2").Select
    ActiveCell.FormulaR1C1 = "1"
    Selection.AutoFill Destination:=Range(Range("C2"), _
        Range("C2").Offset(NumRows - 1, 0)), Type:=xlFillDefault

' this section generates a column of dates with either a 1 or -1
' indicating either a deployment or redeployment
    Columns("C:C").Select
    Selection.Copy
    Columns("B:B").Select
    Selection.Insert Shift:=xlToRight
    Range("D2").Select
    Application.CutCopyMode = False
    Range("D2").Value = "=-1*RC[-2]"
    Range("D2", Range("D1").Offset(NumRows, 0)).Select
    Selection.FillDown
    Range("D2", Range("D1").Offset(NumRows, 0)).Select
    Selection.Copy
    Selection.PasteSpecial Paste:=xlValues, Operation:=xlNone, SkipBlanks:= _
        False, Transpose:=False
    Range("C2", Range("C1").Offset(NumRows, 1)).Select
    Application.CutCopyMode = False
    Selection.Cut
    Range("A1").Offset(NumRows + 1, 0).Select
    ActiveSheet.Paste

' this section sorts the dates and then determines the cumulative number by month

    Columns("A:B").Select
    Selection.Sort Key1:=Range("A2"), Order1:=xlAscending, Header:=xlGuess, _
        OrderCustom:=1, MatchCase:=False, Orientation:=xlTopToBottom
    Range("C1:D1").Select
    Selection.ClearContents
    Range("E2").Select
    ActiveCell.FormulaR1C1 = "=RC[-3]"
    Range("D2").Select
    ActiveCell.FormulaR1C1 = _
        "=IF(MONTH(RC[-3])=MONTH(R[1]C[-3]),"""",DATE(YEAR(RC[-3]),MONTH(RC[-3]),15))"
```

```
    Range("D3").Select
    ActiveCell.FormulaR1C1 = _
        "=IF(MONTH(RC[-3])=MONTH(R[1]C[-3]),"""",DATE(YEAR(RC[-3]),MONTH(RC[-3]),15))"
    Range("E3").Select
    ActiveCell.FormulaR1C1 = "=R[-1]C+RC[-3]"
    Range("D3", Range("D1").Offset(NumRows * 2, 1)).Select
    Selection.FillDown
    Columns("D:D").Select
    Selection.NumberFormat = "mmm-yy"
    Columns("D:E").Select
    Selection.Copy
    Selection.PasteSpecial Paste:=xlValues, Operation:=xlNone, SkipBlanks:= _
        True, Transpose:=False
    Application.CutCopyMode = False
    Selection.Sort Key1:=Range("D2"), Order1:=xlAscending, Header:=xlYes, _
        OrderCustom:=1, MatchCase:=False, Orientation:=xlTopToBottom

'ask for the deployment/redeployment dates for the chart

    Load Dates 'a userform
    Dates.Show

    start = Dates.TextBox1.Value
    halt = Dates.TextBox2.Value


    LastMonth = Month(halt)
    LastYear = Year(halt)
    FirstYear = Year(start)
    FirstMonth = Month(start)
    Yr = 1992
    Mon = 9

'fill in missing months for graphing purposes
    i = 1
    If DateValue(Range("D2")) > DateValue("9 / 15 / 1992") Then
        Range(Range("D1").Offset(i, 0), Range("E1").Offset(i, 0)).Select
        Selection.Insert Shift:=xlShiftDown
        Range("D2").Select
        Selection.Value = "9/15/1992"
        Range("E2").Select
        Selection.Value = 0
        i = i + 1
        Mon = Mon + 1
    End If

    Do Until DateValue(Mon & "/ 15 /" & Yr) > DateValue(LastMonth & "/ 15 / " & LastYear)
        If Mon = FirstMonth And Yr = FirstYear Then
            StartChart = i ' locate start month row for charting purpose
        End If

        If Mon = LastMonth And Yr = LastYear Then
            EndChart = i ' locate 1end month row for charting purpose
        End If

        If Mon = 1 And Yr = FirstYear Then
            MOSstart = i
        End If
' fill in the missing mon/yr and carry the number deployed
        If Not IsDate(Range("D1").Offset(i, 0)) Then 'in case the last deployment is prior to end date
            Range(Range("D1").Offset(i, 0), Range("E1").Offset(i, 0)).Select
            Selection.Insert Shift:=xlShiftDown
            Range("D1").Offset(i, 0).Value = Mon & "/15/" & Yr
            Selection.NumberFormat = "mmm-yy"
            Range(Range("E1").Offset(i - 1, 0), Range("E1").Offset(i, 0)).Select
            Selection.FillDown
            GoTo 25
        End If

        If (Mon < Month(Range("D1").Offset(i, 0).Value)) _
```

```
        Or (Yr < Year(Range("D1").Offset(i, 0).Value)) Then 'month missing from sequence
            Range(Range("D1").Offset(i, 0), Range("E1").Offset(i, 0)).Select
            Selection.Insert Shift:=xlShiftDown
            Range("D1").Offset(i, 0).Value = Mon & "/15/" & Yr
            Selection.NumberFormat = "mmm-yy"
            Range(Range("E1").Offset(i - 1, 0), Range("E1").Offset(i, 0)).Select
            Selection.FillDown
        End If

25:     If Mon = 12 Then ' increment month/year
            Mon = 1
            Yr = Yr + 1
        Else
            Mon = Mon + 1
        End If
        i = i + 1
    Loop 'Until (Mon = LastMonth) And (Yr = LastYear)

' add percentage of MOS calculations
    Avail 'this is another macro, which opens the MOS strength database and creates _
        data for the percent used series

    Sheets("StrengthData").Select
'NOTE:  There are 64 entries in the MOS strength database from Sept 93 to Dec 98
    Range("I1", Range("J1").End(xlDown)).Select
    If IsEmpty(Range("I1")) Then
        GoTo 35
    End If
    MOSDate = Range("I1").Value
    Selection.Copy
    Sheets("ProfileData").Select
' go to the start point for the MOS data Jan 19xx

    MOSDate = Format(MOSDate, "mmm-yy")
    'response = MsgBox("Match = " & Match, vbOKOnly)
    Columns("D:D").Select
    Selection.find(What:=MOSDate, After:=ActiveCell, LookIn:=xlValues, _
        LookAt:=xlPart, SearchOrder:=xlByRows, SearchDirection:=xlNext, _
        MatchCase:=False).Activate
    startrow = ActiveCell.Row
    Range("H1").Offset(startrow - 1, 0).Select
    ActiveSheet.Paste
    Columns("I:I").Select
    Application.CutCopyMode = False
    Selection.Cut
    Range("G1").Select
    ActiveSheet.Paste
35: Range("F1").Offset(StartChart, 0).Select
    ActiveCell.FormulaR1C1 = "=RC[-1]/RC[1]"
    Range(Range("F1").Offset(StartChart, 0), Range("F1").Offset(EndChart, 0)).Select
    Selection.FillDown
    Range("F1").Select
    ActiveCell.FormulaR1C1 = "Percentage"
    Columns("F:F").Select
    Selection.NumberFormat = "0.0%"
    Range("D1").Select
    ActiveCell.FormulaR1C1 = "Date"
    Range("E1").Select
    ActiveCell.FormulaR1C1 = "Deployed"

' add chart
    ProfileChart

' check to see if the user wants to save the file now
    Msg = "Do you want to save the workbook now?"
    Style = vbYesNo + vbDefaultButton1
    Title = "Save Now"
    response = MsgBox(Msg, Style, Title)
    If response = vbYes Then SaveIt
```

```
' see if the user wants to continue with the next chart
    response = MsgBox("Do you want to build the Individual Deployment Chart?", _
        vbYesNo, "Continue")
    If response = vbYes Then IndDeploy
99:
End Sub


'***************************************************************************
Sub Avail()
'
' Avail Macro
' Macro recorded 5/4/99 by Bob Steinrauf
'
Dim working As String
Dim Found As Boolean
On Error GoTo 10

Found = False
'create a new sheet to hold the strength data
    Sheets.Add
    ActiveSheet.Name = "StrengthData"

' open the MOS strength file
    working = ActiveWorkbook.Name
    Workbooks("MOSstren.xls").Activate
    GoTo 11:

' if MOSstren is not open, this will open it

10: Msg = "Please locate the MOSstren.xls file."
    Style = vbOKCancel + vbDefaultButton1
    Title = "Locate data file"
    response = MsgBox(Msg, Style, Title)

    If response = vbOK Then OpenIt
    If response = vbCancel Then End

    Workbooks("MOSstren.xls").Activate

'check for the MOS and description
11: If IsEmpty(MOS) Then
        Load MOSInfo 'a userform
        MOSInfo.Show

        MOS = MOSInfo.TextBox1.Value
        desc = MOSInfo.TextBox2.Value
    End If

'run through the sheets to pull off the information on the selected MOS
    If Year(halt) > 1998 Then
        LastYr = 1998
    Else
        LastYr = Year(halt)
    End If
    FirstYear = Year(start)
    k = 0
    For i = FirstYear To LastYr
        Sheets("" & i & "").Activate
        With Worksheets("" & i & "").Range("B1", Range("B1").End(xlDown))

' this section uses the find command to locate strengths based on either MOS or CMF
        Set C = .find(What:=MOS, LookIn:=xlValues, LookAt _
            :=xlPart, SearchOrder:=xlByRows, SearchDirection:=xlNext, _
            MatchCase:=False)

        firstAddress = Empty
        If Not C Is Nothing Then
            firstAddress = C.Address
            Do
```

```
                Found = True
                RowNum = C.Row - 1
                Workbooks("" & working & "").Sheets("StrengthData") _
                .Range("A1", "D1").Offset(k, 0).Value = _
                    Range("A1", "D1").Offset(RowNum, 0).Value
                k = k + 1
                Set C = .FindNext(C)
            Loop While Not C Is Nothing And C.Address <> firstAddress
        End If

    End With

    Next i

'return to working workbook
    Windows("" & working & "").Activate

' skip the data processing if there was no MOS strength data found
    If Not Found Then
        Msg = "There were no strength totals" & Chr(10) & "for the MOS selected"
        response = MsgBox(Msg, vbOKOnly)
        GoTo 15
    End If
' total the strengths by month
    Columns("A:D").Select
    Selection.Sort Key1:=Range("A1"), Order1:=xlAscending, Header:=xlGuess, _
        OrderCustom:=1, MatchCase:=False, Orientation:=xlTopToBottom
    Range("A1", Range("A1").End(xlDown)).Select
    NumRows = Selection.Rows.Count
    Range("G1").Select
    ActiveCell.FormulaR1C1 = "=RC[-3]"
    Range("G2").Select
    ActiveCell.FormulaR1C1 = "=IF(RC[-6]=R[-1]C[-6],RC[-3]+R[-1]C,RC[-3])"
    Range("F2").Select
    ActiveCell.FormulaR1C1 = "=IF(RC[-5]=R[1]C[-5],"""",RC[-5])"
    Range("F2", Range("G1").Offset(NumRows - 1, 0)).Select
    Selection.FillDown
    Columns("F:F").Select
    Selection.NumberFormat = "mmm-yy"
    Columns("F:G").Select
    Selection.Copy
    Range("I1").Select
    Selection.PasteSpecial Paste:=xlValues, Operation:=xlNone, SkipBlanks:= _
        False, Transpose:=False
    Application.CutCopyMode = False
    Selection.Sort Key1:=Range("I1"), Order1:=xlAscending, Header:=xlGuess, _
        OrderCustom:=1, MatchCase:=False, Orientation:=xlTopToBottom
    Columns("I:I").Select
    Selection.NumberFormat = "mmm-yy"
15:
End Sub


'*************************************************************************
Sub ProfileChart()

    If IsEmpty(start) Then
        Load Dates 'a userform
        Dates.Show

        start = Dates.TextBox1.Value
        halt = Dates.TextBox2.Value
        lastdate = Range("A2").End(xlDown).Value
    End If

    startdate = Format(start, "mmm-yy")
    haltdate = Format(halt, "mmm-yy")
    lastdate = Format(lastdate, "mmm-yy")
    Columns("D:D").Select
    Selection.find(What:=startdate, After:=ActiveCell, LookIn:=xlValues, _
```

```
        LookAt:=xlPart, SearchOrder:=xlByRows, SearchDirection:=xlNext, _
        MatchCase:=False).Activate
    StartChart = ActiveCell.Row
    Columns("D:D").Select
    Selection.find(What:=haltdate, After:=ActiveCell, LookIn:=xlValues, _
        LookAt:=xlPart, SearchOrder:=xlByRows, SearchDirection:=xlNext, _
        MatchCase:=False).Activate
    EndChart = ActiveCell.Row

    Sheets("ProfileData").Select
    Range(Range("D1").Offset(StartChart - 1, 0), Range("D1").Offset(EndChart - 1, 2)).Select
    Charts.Add
    ActiveChart.ApplyCustomType ChartType:=xlBuiltIn, TypeName:= _
        "Line - Column on 2 Axes"

    ActiveChart.Location Where:=xlLocationAsNewSheet, Name:="ProfileChart"
    With ActiveChart
        .HasTitle = True
        .ChartTitle.Characters.Text = MOS & " " & desc & " Deployment Profile"
        .Axes(xlCategory, xlPrimary).HasTitle = True
        .Axes(xlCategory, xlPrimary).AxisTitle.Characters.Text = "Date"
        .Axes(xlValue, xlPrimary).HasTitle = True
        .Axes(xlValue, xlPrimary).AxisTitle.Characters.Text = _
            "Number of Soldiers Deployed"
        .Axes(xlCategory, xlSecondary).HasTitle = False
        .Axes(xlValue, xlSecondary).HasTitle = True
        .Axes(xlValue, xlSecondary).AxisTitle.Characters.Text = "Percentage of MOS"
    End With
    ActiveChart.HasLegend = True
    ActiveChart.Legend.Select
    Selection.Position = xlBottom
    ActiveChart.Axes(xlCategory).Select
    Selection.TickLabels.Orientation = xlUpward
    ActiveChart.PlotArea.Select
    With Selection.Border
        .ColorIndex = 16
        .Weight = xlThin
        .LineStyle = xlContinuous
    End With
    Selection.Interior.ColorIndex = xlNone
    ActiveChart.SeriesCollection(1).Select
    With Selection.Border
        .Weight = xlThin
        .LineStyle = xlNone
    End With
    Selection.Shadow = False
    Selection.InvertIfNegative = False
    With Selection.Interior
        .ColorIndex = 24
        .Pattern = xlSolid
    End With
    With ActiveChart.ChartGroups(1)
        .Overlap = 0
        .GapWidth = 0
        .HasSeriesLines = False
        .VaryByCategories = False
    End With
    ActiveChart.SeriesCollection(1).Name = "=ProfileData!R1C5"
    ActiveChart.SeriesCollection(2).Name = "=ProfileData!R1C6"

    With ActiveChart.PageSetup
        .LeftHeader = ""
        .CenterHeader = ""
        .RightHeader = ""
        .LeftFooter = ""
        .CenterFooter = ""
        .RightFooter = "printed on &D"
    End With

End Sub
```

```
'*********************************************************************************
Sub IndDeploy()
'
' This macro generates the "bar code" chart that shows individual deployments
' Macro written 5/4/99 by Bob Steinrauf
'

Dim Msg, Title, Default As String
    BonCancel = False

'check for the MOS and description
    If IsEmpty(MOS) Then

        Load MOSInfo 'a userform
        MOSInfo.Show

        MOS = MOSInfo.TextBox1.Value
        desc = MOSInfo.TextBox2.Value

    End If

    Sheets("RawData").Select
    Columns("A:B").Select
    Selection.Copy
    Sheets.Add
    ActiveSheet.Paste
    ActiveSheet.Name = "BarData"
    Range("A2").End(xlDown).Select
    NumRows = ActiveCell.Row
    Range("B2").End(xlDown).Select
    startrow = ActiveCell.Row

' insert a place holder return date for those still deployed
    For i = startrow To NumRows - 1
        If IsEmpty(Range("B1").Offset(i, 0).Value) Then
            Range("B1").Offset(i, 0).Select
            Selection.Value = "9/30/99"
            With Selection.Font
                .Name = "Arial"
                .FontStyle = "Bold Italic"
            End With
        End If
    Next i

' set up the columns for the chart
    Columns("E:E").Select
    Selection.NumberFormat = "mmm-yy"
    Range("E1").Value = "Date"
    Columns("F:F").Select
    Selection.NumberFormat = "General"
    Range("F1").Value = "Duration"
    Range("E2").Select
    ActiveCell.FormulaR1C1 = "=RC[-4]"
    Range("F2").Select
    ActiveCell.Formula = _
        "=DateValue(text(B2, ""mm/dd/yy"")) - DateValue(Text(A2, ""mm/dd/yy""))"
    Range("E2", Range("E1").Offset(NumRows - 1, 1)).Select
    Selection.FillDown
    NumDeployments = ActiveCell.Row
    Range("D2").Value = 1
    Range("D3").Value = 2
    Range("D2", "D3").AutoFill Destination:=Range("D2", Range("D1").Offset(NumRows - 1, 0)), Type:=xlFillSeries

'Pickup the start and end dates for the chart
    If IsEmpty(start) Then
        Load Dates 'a userform
        Dates.Show
```

```
        start = Dates.TextBox1.Value
        halt = Dates.TextBox2.Value
    End If

' select the minimum of numrows or 4000 instead of x1Down
    Worksheets("BarData").Select

    If NumRows < 4001 Then
        Range("D1", Range("F1").End(xlDown)).Select
        NumCharts = 1
    Else
        Range("D1", Range("F1").Offset(4000)).Select
        NumCharts = Int(NumRows / 4000) + 1
    End If

' Select the data for the chart and create the chart

    DeployChart  'This macro creates the deployment chart

' this module handles those cases in which there are more than 4000 deployments
' (the maximum numer that Excel 3-D chart can handle)
    If NumCharts > 1 Then
        i = 1
        Do Until i = NumCharts
            Sheets("BarChart").Copy After:=Sheets("BarChart")
            NumDeploys = NumRows - 4000 * i
            If NumDeploys < 4000 Then
                AddRows = NumDeploys
            Else
                AddRows = 3999
            End If
            startrow = 2 + 4000 * i
            EndRow = startrow + AddRows

            ActiveChart.SeriesCollection(2).Select
            ActiveChart.SeriesCollection(2).Formula = _
                "=SERIES(BarData!R1C6,BarData!R" & startrow & _
                "C4:R" & EndRow & "C4, BarData!R" & startrow & _
                "C6:R" & EndRow & "C6,2)"
            ActiveChart.SeriesCollection(1).XValues = _
                "=BarData!R" & startrow & "C4:R" & EndRow & "C4"
            ActiveChart.SeriesCollection(1).Values = _
                "=BarData!R" & startrow & "C5:R" & EndRow & "C5"
            ActiveChart.SeriesCollection(2).XValues = _
                "=BarData!R" & startrow & "C4:R" & EndRow & "C4"
            ActiveChart.ChartTitle.Select
            Selection.Characters.Text = _
                MOS & " " & desc & "Deployments (cont.)"

            i = i + 1

        Loop
    End If

' check to see if the user wants to save the file now
    Msg = "Do you want to save the workbook now?"
    Style = vbYesNo + vbDefaultButton1
    Title = "Save Now"
    response = MsgBox(Msg, Style, Title)
    If response = vbYes Then SaveIt

End Sub


'*********************************************************************************
Sub DeployChart()
    Charts.Add
    ActiveChart.ApplyCustomType ChartType:=xlBuiltIn, TypeName:="Floating Bars"
    ActiveChart.Location Where:=xlLocationAsNewSheet, Name:="BarChart"
    With ActiveChart
```

```
      .HasTitle = True
      .ChartTitle.Characters.Text = MOS & " " & desc & " Deployments"
      .Axes(xlCategory).HasTitle = True
      .Axes(xlCategory).AxisTitle.Characters.Text = "Individual Deployments"
      .Axes(xlSeries).HasTitle = False
      .Axes(xlValue).HasTitle = True
      .Axes(xlValue).AxisTitle.Characters.Text = "Date"
   End With
   ActiveChart.WallsAndGridlines2D = True 'False
   ActiveChart.HasDataTable = False
   ActiveChart.ChartArea.Select
   ' With Selection.Border
   '    .Weight = xlHairline
   '    .LineStyle = xlNone
   ' End With
   Selection.Shadow = False
   Selection.Interior.ColorIndex = xlNone

' set up the x axis based on start and end dates
   ActiveChart.Axes(xlValue).Select
   With ActiveChart.Axes(xlValue)
      .MinimumScale = DateValue(start)
      .MaximumScale = DateValue(halt) + 30
      .MinorUnitIsAuto = True
      .MajorUnit = 91
      .Crosses = xlAutomatic
      .ReversePlotOrder = False
      .ScaleType = xlLinear
      .HasMajorGridlines = True
      .HasMinorGridlines = False
   End With
   With Selection.Border
      .Weight = xlHairline
      .LineStyle = xlAutomatic
   End With
   With Selection
      .MajorTickMark = xlNone
      .MinorTickMark = xlNone
      .TickLabelPosition = xlLow
   End With
   Selection.TickLabels.AutoScaleFont = True
   Selection.TickLabels.Orientation = xlUpward
   With Selection.TickLabels.Font
      .Name = "Arial"
      .FontStyle = "Normal"
      .Size = 10
      .ColorIndex = xlAutomatic
      .Background = xlAutomatic
   End With

' format the category (y) axis
   ActiveChart.Axes(xlCategory).Select
   With Selection
      .MajorTickMark = xlNone
      .MinorTickMark = xlNone
      .TickLabelPosition = xlLow
   End With
   With Selection.TickLabels.Font
      .Name = "Arial"
      .FontStyle = "Normal"
      .Size = 10
      .ColorIndex = xlAutomatic
      .Background = xlAutomatic
   End With

' format the data series
   ActiveChart.SeriesCollection(2).Select
   With Selection.Border
      .Weight = xlThin
      .LineStyle = xlNone
```

```
        End With
        Selection.InvertIfNegative = False
        With Selection.Interior
           .ColorIndex = 1
           .Pattern = xlSolid
        End With
        ActiveChart.ChartGroups(1).GapWidth = 70
        With ActiveChart
           .DepthPercent = 20
           .GapDepth = 50
        End With

End Sub


'***************************************************************************
Sub OpenIt()
'
'   this opens a file
'
     ChDir "C:\My Documents\"
5:   fname = Application.GetOpenFilename(filefilter:="Excel Files (*.xls), *.xls")
     If IsEmpty(fname) Then
        Msg = "Are you sure you want to cancel?"
        Style = vbYesNo + vbDefaultButton1
        Title = "Locate data file"
        response = MsgBox(Msg, Style, Title)

        If response = vbNo Then GoTo 5
        If response = vbYes Then End
     End If
     Workbooks.Open FileName:=fname
End Sub


'***************************************************************************
Sub SaveIt()
'
' This saves the data file
'
     ChDir "C:\My Documents\STA"
     ActiveWorkbook.SaveAs FileName:=MOS, FileFormat:=xlNormal

     ' fname = Application.GetSaveAsFilename(filefilter:="Excel Files (*.xls), *.xls")
     'If fname <> False Then
     '    ActiveWorkbook.SaveAs FileName:=fname, FileFormat:=xlNormal

     ' End If
End Sub
```

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APPENDIX E. REQUEST FOR ANALYTICAL SUPPORT